

# Psychological Bulletin

## RECENT LITERATURE ON INDIVIDUAL CORRELATES OF CRIME

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This review of literature on crime and delinquency includes publications from 1930 to 1940. In this extensive field—upon which medicine, sociology, law, and psychology converge—selection of books and articles has been determined by their psychological flavor and their suggestiveness for research.

### DEFINITIONS OF CRIME

Michael and Adler (59) have defined crime as behavior prohibited by the criminal code. To them, this legal definition was the only possible one. They felt that a more general definition in terms of violation of the moral code of a group would be ambiguous. The reviewers agree that, if all immoral and unethical acts were called crimes, there would be no need for the term *crime*. In line with their definition, Michael and Adler have used *crime* and *delinquency* as words applied to identical behavior and distinguished only in terms of the offender's age.

Objection has been made by Sutherland (88) to such a legal definition of crime. He called the contention that there would be no crimes if there were no laws one of words only. If stealing were removed from the penal code, legally it would not be a crime; but, Sutherland maintained, the public would still react to such behavior with some punishment. The reviewers feel, however, that many acts in the codes would not be punished if the laws were repealed. Crimes defined as the result of legislative pressure by small groups form a clear-cut example. Sutherland believed that crime involves three elements: a value appreciated by a politically important group; a situation leading some individuals to endanger the value; and resort to coercion against those who disregard the value by those who appreciate it.

The difference between these viewpoints, representative of the

two extremes in definition found, could be resolved if the former implied by the term *criminal code* all acts punished by a group with sovereign power, whether or not stated in written laws. Such usage would be in line with the attempt to define criminals in terms of operations—not the operations of an experimenter but of the sovereign public or its representatives. The first of these operations involves forbidding or requiring certain acts; others include the stages from apprehension to punishment. This approach maintains that to call an individual a criminal requires a *demonstration* of all the operations. It provides an objective basis for work in this field.

#### MULTIPLE-FACTOR THEORY

The search for a single cause of crime has not been much in evidence during the past decade. In most of the investigations attempting to establish the relationship to offenders of a single factor, it has been either stated or implied that crime is the result of many factors, of which the one studied was but a single instance. Generally, in the case of an individual criminal, some, but not necessarily all, of the correlates of crime have been assumed to be present. Certain of the factors which have been studied were descriptive of individuals; others referred to the environment. This review is confined to literature on several of the individual correlates of crime.

#### CHRONOLOGICAL AGE

During the past decade, additional evidence has been presented to demonstrate that young people furnish more criminals than their frequency in the population warrants. In the 1930 census, the age group 20 to 24 comprised 8.9% of the population of the United States; but 20.4% of the arrests were within that age range in 1937. On the other hand, the age group over 50 contained 17.2% of the population but only 8.7% of the arrests (71). Similar data for a single state have been secured by Duncan (20). Comparing the ages of Texas prisoners for the years 1906-1924 with the ages of the general male population of the state, he showed that over 83% of the crimes were committed by those under 40, who made up about 66% of the population. These criminals under 40 exceeded their expectancy by almost one-third, whereas the age group 40 to 49 had a crime rate of little more than one-half of its expectancy.

An age curve of crime that rises abruptly through adolescence,

reaches a peak in young manhood (between 19 and 24 years), and declines with maturity was reported by Reckless (71) as descriptive of the age factor in crime. He criticized juvenile court statistics showing a rise to 16 years and then a decline on the grounds that many juvenile courts have no jurisdiction after the age of 16.

To see if young people are gradually contributing a larger percentage of criminals, Wood and Waite (92) compared Michigan prisoners for the years 1875 and 1935. In this 60-year period the average age of convicts increased more than two years. Greater use of probation for first offenders at the present time may account for the increase, but the shortening of prison sentences would have the opposite influence.

In their book on frustration and aggression, Dollard, Doob, Miller, Mowrer, and Sears (19) have pointed out the possibility that crime may tend to be a youthful occupation because, with age, the individual becomes more settled in society, his level of frustration generally decreases, and his responsiveness to the threat of punishment becomes greater.

Police statistics continue to bear out the recognized relation of age to type of crime. In 1940 it was reported (96) that individuals under 25 committed over two-thirds of the auto thefts and over half of the robberies, though only 33% of all arrests and convictions involved this age group. Sixty-seven per cent of demonstrated criminal acts fell in the age groups from 25 to death, but 79% of liquor law violations were attributed to this group. In general, it may be said that crimes against property (excluding fraud, forgery, and embezzlement) have more than their share of youthful perpetrators. Crimes against the person are concentrated above the age of 25.

#### SEX

For no correlate of crime has there been found a more marked relationship than that between sex and crime. The ratio of male to female arrests at the present time is about 10 to 1 for all offenses, but, since commercialized vice and minor offenses are generally punishable by fine or local imprisonment, the ratio of men to women in federal and state prisons is probably greater. In juvenile delinquency, a similar relationship has been found. Maller (55) reported that 93% of all children classified as delinquents before the New York Children's Court from 1903 to 1936 were males. In the 10-year period beginning with 1925, the ratio was 7 boys to 1

girl. In a study of 149 juvenile delinquents in a rural county in Oregon, Roach (74) found that over twice as many boys as girls were arrested (102 and 47, respectively), but almost an equal number (40 and 39) were committed to institutions. The reason given for this was the fact that girls were sent to maternity hospitals as well as to the industrial school. Ackerson (1) found that the ratio of white boys to girls at the Illinois Institute for Juvenile Research was 5 to 3. The reviewers feel that the increasing ratio of boys to girls as one moves from behavior problems to delinquency to crime should be watched for future developments.

Interpretation of the sex differences in crime in terms of greater aggressiveness on the part of men has been made by Dollard and his collaborators at Yale (19). Back of the aggressiveness lie the greater size and strength of men, their greater activity outside the home, and accepted standards of masculine behavior. As women play a more active part in life outside the home, the ratio of men to women criminals may change. Whether or not from this cause, some evidence of such a change has been reported. In the years from 1902 to 1932 there was a decrease of more than 50% in the number of demonstrated delinquents per 1000 children of court age in New York City. However, this decline was concentrated entirely among the boys, and the ratio of boys to girls has dropped from 60:1 to 8:1 (54).

Sex differences have also been shown for type of crime committed. In the Uniform Crime Reports (96), a comparative study of an average group of 1000 men and 1000 women revealed that the latter were arrested more frequently than the men for murder, assault, use of narcotic drugs, and liquor violations. The men in the study were charged with offenses against property more frequently than the women. The reliability of these differences was not given. Wood and Waite (92) reported that 9.6% of the women and 5.7% of the men committed to state and federal prisons and reformatories in 1935 were there for homicide. Juvenile Court Statistics for 1934 (95) showed that boys were referred to the court most frequently for stealing, carelessness or mischief, and traffic violations, whereas the girls appeared most frequently for being ungovernable, running away, and sex offenses.

#### RACE AND NATIONALITY

Differences in the crime rates of the individuals representing various races and nationalities have been revealed by many varied

studies. However, with other related factors held constant, it appears likely that membership in a given race or nationality would not be correlated with crime.

Evidence gathered in the past decade supports, in the main, the idea that immigrants are more law-abiding than negroes and native whites. For example, during the first nine months of 1940, for every 100,000 in the population 15 years or older 1290 negroes and 474 native whites were arrested, but only 151 foreign-born whites (96).

Some investigations have indicated also that the crime rate of the children of immigrants is higher than that of the children of native-born whites and of immigrants. Caldwell (11), for example, found that the children of foreign parentage in Wisconsin were "decidedly more delinquent" than those of native parentage when compared to the state's male population of the same age group. Different results were reported from 1930 census data by Taft (89). In 17 of 26 states, the children of native parentage had higher crime rates than the children of foreign parentage. The other 9 states were largely industrial, with large cities and concentrations of recent immigrants. Data supporting Taft's results were found by Ogburn (65). Correlating crime rates and the number of offspring of immigrants in three groups of cities of different size, he obtained coefficients of  $-.54$ ,  $-.51$ , and  $-.34$ . Although only the first two are significant, the agreement in direction of these coefficients gives some indication that the presence of the offspring of immigrants may be helpful in keeping down crime rates. Conflicting results from studies of this kind may be due to sampling or to different methods of figuring crime rates (such as including or excluding minor crimes).

Eleanor Glueck (32) compared 121 native-born delinquents of native parentage with 461 native-born delinquents of foreign parentage. After analyzing a number of factors (such as economic status and relations of parents) to see which were advantageous to each group, she concluded that there was less apparent reason for crime to be committed by the children of immigrants than by the children of native-born parents. The reviewers point out that assuming the factors to be of equal weight and adding them on two sides of a ledger is doubtful procedure. Moreover, many questions could be raised as to which factors should be considered advantageous. As a result of this study, Glueck suggested that the conflicts resulting from the different nativity of parents and children

accounted at least partly for the delinquency of the offspring of immigrants.

Sutherland (88) has regarded such cultural conflict as the underlying cause of systematic criminal behavior. As used in the literature on crime, the term apparently applies to inconsistent influences—both restraining and motivating—on the individual. Sellin (80) said that, in the study of conduct, it is necessary to think of culture conflict as a conflict of conduct norms. Native-born children of immigrant parents live frequently in environments in which two standards and sets of rules are in force. Conduct approved by one culture may be disapproved and punished by the other. Immigrant parents may have difficulty in giving their children guidance in an environment which they do not understand; as a result, the children may commit delinquencies in living according to the standards of their parents or in trying to adjust to their nonparental environment.

Opposing such a viewpoint, Ross (77) has contended that the higher delinquency and crime rate of those with immigrant parentage is due to the culture of the socioeconomic environment in which they find themselves. He believed it incorrect to speak of them as a group having the culture neither of their parents nor of the American environment to guide them.

Differences in crime rate have also been found between offspring of the foreign-born of various races. According to Armstrong (5), 70% of the delinquents arraigned yearly before the New York City Court were the children of immigrants. In view of the population of each group, the Italians showed nearly double their expected crime rate, the Russians exceeded theirs, and the Negroes tripled their expected crime rate. Those with rates below their population rates were the English, Germans, Irish, and Austrians. Approximately the same situation held for truants in the city schools. Glueck and Glueck (33), in a study of 1000 delinquents, compared the countries of origin of the foreign-born fathers of the boys with those of the general foreign-born population and discovered that the Irish, Russians, Canadians, and English had lower proportions than expected, whereas the Italians, Poles, Lithuanians, and French Canadians had higher proportions. The Polish, French, Italian, Greek, Scotch, and Lithuanian peoples topped the delinquency list in Caldwell's study (11) in Wisconsin.

Evidence that the type of offense committed is different in the offspring of immigrants than in immigrants themselves has been reported by Stofflet (87). The shift was from crimes of violence to

predatory types of offense. For example, of the crimes of 603 foreign-born criminals, 11.9% were homicides, and 8.6% were cases of burglary. In contrast, the crimes of a group of 878 American-born criminals of foreign parentage were classified as follows: homicide, 5.1%; burglary, 20.8%. These differences were reliable, but the relationship of age of criminal to the various types of crime was not controlled in the study.

Taft (89) has stressed the importance of taking age distributions into account in studies of this factor. For instance, using rate per 100,000 of the male population in the United States 15 years of age or over, the crime rate in 26 states of those of French descent was 35.8 and that of people of Russian descent, 58.1. However, when corrected for the age composition of each of the groups, the rates were 43.3 and 41.8, respectively.

One indication that race differentials in crime may be reduced to other factors comes from Reuter (73), who found that, in general, the rates of negro commitment to prison were lower in the southern states than in the northern states. For instance, in Mississippi, with over half its population negro, 70.9% of the prisoners committed to prison were negroes; whereas in New York, with only 3.3% negroes, 15.7% of the committed prisoners were negroes. Reuter gave three possible explanations for this: the high percentage of northern negroes dwelling in cities as compared to rural areas, the larger proportion of northern negroes in age groups where probability of crime is greatest, and protection by southern whites of negroes who accept inferior status.

Further evidence that racial differentials can be reduced to other factors has come from Shaw (84). He found that areas near the center of Chicago had high delinquency rates regardless of marked changes in the composition of the population. Despite occupation at different times by Germans, Scandinavians, Poles, and Negroes, the delinquency rates of one area remained high.

In terms of their frustration-aggression hypothesis, the Yale collaborators (19) have suggested that racial differences in crime rates may be explained in terms of the relative frustrations which the various races undergo and in terms of the weakening of the threat of punishment by parent groups as new social contacts are made.

#### PHYSICAL TRAITS

Studies of physical traits and crime have been of two types: those investigating the physical characteristics of offenders and

those studying the incidence of criminals and delinquents in groups with physical disorders.

Comparing 668 native white criminals with a noncriminal group, anthropologist E. A. Hooton (41) came to the conclusion that the primary cause of crime is biological inferiority. Use of a control group of 146 firemen from Tennessee and 167 individuals from Massachusetts hospitals, a national guard unit, and ocean bathers renders this sweeping conclusion of doubtful validity. Even if significant physical inferiority of criminals were found with a more adequate control group, the figures would not show that such inferiority is a direct cause of crime.

Hooton's figures did indicate differences between the various types of offenders. For instance, robbers differed significantly from other criminals in nine morphological traits (such as medium ear protrusion, attached ear lobes, and large beard quantity). However, no single robber had all these characteristics. About 1½% of the 414 robbers studied had none at all, and approximately 80% had four or less. These data give evidence that there is no clear-cut physical type characteristic of criminals.

Evidence that there may be a biological factor predisposing to crime has been given by Rosanoff, Handy, and Rosanoff (76). They located 65 adults with prison records, each of whom had a like-sexed twin. Of the 37 who were probably monozygotic, both twins had criminal records in 68% of the cases. Of the 28 cases who were probably dizygotic, both twins had such records in only 18% of the cases.

The physical capacity, rather than structure, of 504 reformatory inmates was studied by Frank and Cleland (29). Measures of force (such as right-hand grip) and velocity (the distance a person could leap into the air) were used, and no significant relationship of the resulting physical capacity index to type of crime was found. The inmates were inferior to 50 guards in the measure of force. They were superior to these men in velocity, but they were not superior to a group of college students more nearly their own age. Negroes were found to excel all other groups in physical capacity. The authors concluded that physical capacity should be considered in deciding the treatment of inmates.

In an investigation of 150 problem boys in Cleveland, Moore (61) found that they were less proficient in most athletic abilities than school children in general. His figures showed, for instance, that normal boys of 14 ran 50 yards in 7.5 seconds, whereas problem boys required 8.5 seconds. Inasmuch as other children possess the same physical deficiencies without be-

coming serious social problems, Moore suggested that problem boys have different methods of compensating for their weaknesses.

Comparing 282 consecutive cases at the San Francisco Juvenile Detention Home with 282 unselected boys from a junior high school with respect to physical disabilities revealed by a thorough physical examination, Christie (15) found that in almost every item the incidence of difficulty was greater among the delinquent boys. Items showing great differences in incidence between the juvenile court and normal boys, respectively, were dental caries—74.8% and 29%; poor oral hygiene—76.7% and 37.6%; and defective tonsils—50.4% and 28.7%.

Orner (69) found that 13 of 21 problem boys had basal metabolic rates within the normal range, but that three times as many showed rates below 90 as above 110 (6 and 2, respectively). The number of cases was too small for definite conclusions, but the similarity of these findings to those of Levy (52) on hyperactive problem children suggested to the author a possible relationship between low basal metabolism and lowered threshold of resistance to impulsive behavior. Both Orner's study and that of Molitch and Eccles (60) on 200 delinquents found no direct relation between basal metabolism and intelligence.

Another approach to the problem of physical traits has been made in a study by Rowe (78). From 4000 cases referred for physical diagnostic study because outward evidences suggested endocrine disorder, the 650 individuals less than 17 years of age were divided into two groups for comparison: 374 who had a demonstrable endocrine disorder (*e.g.* pituitary dysfunction) and 276 with some disease condition unassociated with the endocrines (*e.g.* tuberculosis). Of the former group, 18.2% had behavior problems of some sort, in contrast to 13.0% of the latter. These figures suggested a possible endocrine association with behavior problems, Rowe felt, though he did not believe they established the existence of a direct causal relation.

A comparison of encephalitic children with other children in the Illinois Institute for Juvenile Research was made by Jenkins and Ackerson (45). They calculated tetrachoric correlation coefficients between the entry "diagnosis of encephalitis" and about 200 items (using 5000 cases, of whom 57 were given diagnoses of encephalitis and 92, diagnoses of question of encephalitis). The highest correlation was with the item "question of change of personality" (+.70 ± .05). Other items significantly related to presence of encephalitis were emotional instability, irritability, nervousness, disobedience, and listlessness.

These varied articles agree that there is no distinct physical type associated with crime and delinquency. Most of them concur, also, in the notion that physical disabilities appear to be found more frequently in criminals and problem cases than in the normal population. Why this is the case has not yet been shown definitely. Wood and Waite (92) have made the comment that physical illnesses and other deficiencies go along with the poor economic conditions of prisoners. That physical defects are significant to crim-

inals in some cases because of the effect of the ridicule of others has been suggested by Sutherland (88). This point of view is related to that of the Yale authors (19). They believe that unfortunate facial conformations and bodily incapacities increase the amount of frustration experienced by an individual and may lead to aggressive behavior. What relation there is between physical traits and crime is, then, generally thought of as an indirect one.

#### INTELLIGENCE

##### *Incidence of Feeble-mindedness Among Offenders*

Reports in the past 10 years do not agree on the relative incidence of feeble-mindedness among criminals and the general population. Lack of conclusive evidence on this point has resulted from the use by different investigators of (1) various tests and methods of testing, (2) several criteria of feeble-mindedness, and (3) incomparable samples of both criminals and the general population.

Reviewing studies of about 175,000 offenders, Sutherland (93) found estimates of feeble-mindedness among criminals ranging from 1 to 96%. In the years 1910-1914, the median report was 51%; in studies from 1925-1928, this figure was reduced to 20%. Along with this decrease—partly attributable to changes in testing methods and in classification of offenders—Sutherland reported an increase in the percentage of the general population classified as feeble-minded. He concluded that feeble-mindedness has not been demonstrated to be a generally important cause of crime.

Zeleny (94) calculated, from 163 studies of criminal intelligence using the Binet test, that 30% of 61,999 criminals had been diagnosed as feeble-minded. This percentage did not change over 5% in the different sections of the country, but in individual studies there was variation from 5.5% to 100%. Zeleny suggested that these differences were attributable partly to the influences of the sex of criminals, the tests used, the standards of feeble-mindedness, the type of crime, and so forth. When compared in terms of criteria of feeble-mindedness as nearly constant as possible and in relation to Army draft figures for noncriminals, a selected group of the studies revealed only "slight criminal inferiority." For every noncriminal with a mental age of less than 11, Zeleny estimated that there were 1.8 criminals.

A study of 150 white male adult delinquents—74% of whom were indicted for property crimes—was reported by Shakow and Millard (83). Comparison of results on the Stanford-Binet for this

group and an Army group showed no significant difference in incidence of feeble-mindedness. Also, the two groups did not differ significantly in mean mental age, but the criminal sample had a larger percentage of cases with mental ages between 10 and 12 (51% in contrast to 33%).

Six per cent of 401 reformatory cases were diagnosed as definitely feeble-minded, as compared to more than 7% designated superior, according to Frank (28). No comparison with a control group was made, nor were the bases of diagnosis stated quantitatively.

Studies of the intelligence of criminals have pointed out the possibility that, if a noncriminal control group similar in economic and social status to that of prisoners were used, excessive incidence of feeble-mindedness among the latter would not be found. Lichtenstein and Brown (53) studied 658 grade school children from an area of high delinquency. Approximately 10% of these children had IQ's below 70. Use of this percentage in comparing noncriminals and criminals would often lead to results less unfavorable to offenders. For instance, test results (largely from the Bregman revision of the Army Alpha) for 13,454 adult male admissions into prisons from 1930 to 1936 revealed 10.2% with IQ's below 70 (8). The authors compared this result with the theoretical frequency of 1% feeble-mindedness for the general population and concluded that there were a disproportionate number of mentally retarded inmates in this prison group. The same conclusion could not have been drawn if 10% of the noncriminal population of similar status had been estimated to be feeble-minded.

Other studies have attempted to use as controls individuals of the same general status and have still shown disproportionate numbers of feeble-minded among offenders. Comparison of Kuhlmann-Anderson IQ's for 528 reform school boys (352 white and 176 negro) and 344 public school boys of the same status (172 white and 172 negro) was made by Charles (12). Of the delinquents, 29.5% of the white boys and 47.3% of the negro boys had IQ's under 70. In the public school group, the figures were 1.16% and 3.48%, respectively.

From his survey of studies of the problem, Doll (18) concluded that imprisoned adult males are not significantly inferior to non-criminals in intelligence, *except for the prevalence of feeble-mindedness* and the influence of selective factors in relation to social status, but that feeble-mindedness is a very serious individual in-

fluence in criminality. No figures were given in support of these statements. Important as Doll believed feeble-mindedness to be, however, he thought that even it should not be taken as an explanation of criminal conduct without considering other contributory factors.

That the connection of feeble-mindedness and crime is no simple one has also been indicated by studies of the complicating influence of other factors. Erickson's study (26) of Wisconsin criminals indicated that the feeble-minded individual of foreign birth is responsible for a great excess of crime over his fair quota as determined by population ratios (an excess ranging from 230 to 250%), whereas this was not true of non-feeble-minded immigrants. Studying a group of institutionalized delinquents, Lane and Witty (50) found that boys who had been living with their parents had a mean IQ of 91.8, whereas those who came from broken homes had a mean IQ of 88.7. The  $D/\sigma_D$  was 2.53.

#### *Intelligence Test Scores of Offenders*

In addition to studies of the relation of feeble-mindedness to crime, there have been investigations of the distribution curves and averages of the test scores of offenders.

Moore (63) gave the Otis S-A test to 152 institutionalized delinquent boys and to 157 institutionalized dependent boys of the same age range. The median IQ's with the Otis norm were 68.9 and 86.4, respectively; with a 14-year norm, they were 74.4 and 89.9. Use of a nonverbal test on 148 of the delinquent boys and 118 dependent boys resulted in IQ's of 85.7 and 100. All these differences favoring the dependent boys were statistically reliable. Eighty-two per cent of the delinquent boys had IQ's below 90 when calculations were made with the 14-year norm.

The average IQ on Dearborn exams for literate whites in a group of 103 prison farm boys was reported by Ruggles (79) to be 73. That for illiterates was 75.

Jameson (44) found a median IQ of 81 and a range from 57 to 126 in a study of 106 institutionalized delinquent girls.

According to a study by Rogers and Austin (75), the mean IQ of 3584 Toronto delinquents was 82.2. That this peak for delinquency may in part be ascribed to the difficulties in school of the dull normal group was the authors' suggestion from their findings. The IQ's for the group—most of them from the Stanford-Binet test—distributed themselves according to the normal frequency curve.

Owen's statistical summary (70) of 21 studies of institutionalized delinquents from 1918 to 1936 showed a mean IQ of  $82.4 \pm .18$ . Four studies reported during the years 1918–1921 and five studies during 1932–1935 gave mean IQ's of 78.1 and 83.6, respectively. This significant increase may be attributable to different testing methods and to the present prac-

tice of eliminating feeble-minded delinquents from correctional schools.

In 10 studies of delinquent boys in which central IQ was given, Lane and Witty (50) reported scores ranging from 74.8 to 90. Their own investigation of approximately 700 delinquent boys gave a mean IQ of 87.96 and a distribution in which more than 80% were below the average of unselected children studied by Terman. Ten per cent had IQ's below 70. The authors pointed out that probably the group would not be inferior to a nondelinquent group of the same social and economic status.

An investigation of 428 recidivists by Mann and Mann (56) resulted in a mean of approximately 78, in contrast to the mean IQ of 84.45 obtained for the total group of 1731 delinquents. Shakow and Millard's study (83) of 150 white male delinquents, most of whom were recidivists, gave a mean Stanford-Binet IQ (14-year basis) of 88.6. The author pointed out that this group did not differ significantly from an Army group in mean mental age, but it did have a larger proportion of subjects at dull intellectual levels.

From their study of 13,454 adult male prisoners, Brown and Hartman (8) reported that they had approximately the same level of intelligence as the general population (as revealed by the Army draft figures). However, compared to the theoretical frequency for the whole population, the distribution for prisoners was more heterogeneous, showed a disproportionate number of mentally retarded and mentally defective men, and approximately the same proportion of superior and very superior individuals.

A group of 1285 young male offenders studied by Hill (38) had a median Alpha score of 72.94 in contrast to the median of 53.28 of 1047 select members of the Army draft. Only 4% fell in the D-, or very inferior class, but Hill pointed out that the group fell predominately in the dull normal class.

Lichtenstein and Brown's study of a delinquency area (53), cited in the previous section, showed the mean intelligence quotient to be 91.7, somewhat higher than the figure generally quoted for delinquents despite the similarity of background involved.

Glueck (31) compared 1000 juvenile delinquents with 3638 school children and obtained the following distributions: IQ 91 and above—41.6% and 79%; 81-90—28.2% and 14%; 71-80—17.1% and 5.5%; 70 or below—13.1% and 1.5%. She pointed out that this evidence was confirmed by findings on 500 delinquent women and 500 criminals as well as by other data from juvenile delinquents. Her data led her to say that the expectancy of delinquency among those of lower intelligence is at least five times as great as for those of higher intelligence.

Ackerson (1) has reported a study of the relation of age and intelligence to personality and conduct disorders in 4592 white children examined at a behavior clinic. The incidence of 154 frequently appearing problems was tabulated, as well as a personality-

total and a conduct-total (summations of the problems under two main heads) for each child. The incidence curves for either CA or IQ level were found to vary with the trait in question. Rise in occurrence with increase in CA or IQ was characteristic of the largest single group of curves (*e.g.* daydreaming, laziness). Other curves decreased, remained level, or arched in the middle, when plotted against either CA or IQ. Ackerson found that, among pre-adolescent children, the average number of behavior difficulties increased with IQ level up to about 110-120 IQ, beyond which there was probably a decrease, especially among conduct problems. Among children from 13 to 18, the average number of behavior difficulties increased with IQ level up to about 70-80 IQ, beyond which there was a decrease, especially among conduct problems.

The incidence of behavior problems in a group of 700 cases referred to a clinic was studied by Levy (51). No individuals with IQ below 80 were included. Levy reported that, as intelligence level rose, the percentage of personality and emotional problems present in the group rose from 25 to 53 and the percentage of physiological problems rose from 13 to 23. In contrast, the percentage of delinquency decreased from 32 to 12 and the percentage of academic problems from 17 to 4. Because of the possibility that the type of problem might be intimately connected with economic level, a group of 50 youngsters with IQ's over 110 who belonged to the lowest economic scale was compared with a group of 70 children with IQ's between 80 and 90 who belonged to the highest economic level. Indicating that type of problem is more closely connected with intelligence than economic level, the problems of the former group were primarily personality difficulties and those of the latter group were largely social problems. The differences were statistically significant.

A different type of approach to the problem of intelligence and crime has been made by Chassell (13). She surveyed almost 300 studies of the relation between morality and intellect, covering data on approximately 11,000 feeble-minded, 300,000 delinquents, and 12,000 nondelinquents. Noncorrelational data, where possible, were calculated in terms of coefficients of colligation, and altogether 700 coefficients of various sorts formed the basis for the conclusions drawn. In the groups studied, she found correlations varying from .10 to .39, and she estimated that the true relation would be under .50. She estimated, also, that for the population at large the correlation between these two variables would be higher, but not larger than .70.

Selling and Stein (82) have pointed out that the delinquent boy is handicapped on tests which involve verbal responses. Comparing 100 boys from a corrective school with 100 public school boys on a vocabulary test designed to allow for choice of either delinquent or nondelinquent meanings, they found a significant difference between the scores of the two groups.

Besides studies using the customary verbal tests of intelligence, attempts have also been made to differentiate offenders from the general population in terms of scores on other types of test. Hinrichs (39) reported differences (both by descriptive and scoring techniques) found between delinquent and nondelinquent boys on the Goodenough drawing test. His main experimental group consisted of 81 delinquent boys from a state institution. Four control groups of nondelinquents were used: one departing from the delinquents both in academic ability and economic level; one departing in academic ability with economic level held constant; one similar in both academic ability and economic level; and one similar in home background and institutionalization, selected from a state home for dependent and neglected children. The secondary groups consisted of 29 feeble-minded children with a conduct disorder and 40 feeble-minded with acceptable conduct. Mean scores for the groups showed consistent inferiority of the delinquent. Not all the differences between the separate groups were significant, but all showed the same trend. In addition, single pairs selected for rigid control of age and intelligence showed the delinquent inferior to the control more often than superior. That behavior problems were associated with low drawing score was further suggested by results from comparing the two feeble-minded groups in whom behavior was the only variable. On the qualitative side, inferiority of delinquents was shown by the juvenile nature of their choice of character for drawing and by the incongruous elements introduced. That the drawing test may be a worth-while addition to ordinary tests for use with delinquents was indicated by its low correlation with general intelligence test scores and its positive, though slight, correlation with Fursey Developmental Age results.

Another test with possible value for work with delinquents is the Porteus maze test, believed by its designer to cover prudent and preconsidered action not tested in the Binet. Comparing the results of 185 socially maladjusted and 185 socially adjusted children, Karpeles (46) found that the adjusted children tended to make higher averages on the mazes than on the Stanford-Binet (94.31 and 86.24), whereas the maladjusted children evidenced no significant difference in performance on these two tests (84.62 and 86.04). In fact, maladjusted children with IQ's

above 80 tended to make a lower average on the mazes than on the Stanford (89.5 and 93.6). This was not true of all types of delinquents, however; for instance, thieves averaged higher on the Porteus test than on the Stanford-Binet. In comparing the average score on the mazes made by the control subjects with that of the maladjusted subjects, Karpeles found that the former had a significantly higher average (94.31 and 86.04). She pointed out that this study strengthened Porteus' claim that scores on the maze test are lower in delinquency and confirmed findings of Poull and Montgomery made on subjects with lower intelligence.

Different results were obtained by Shakow and Millard (83). In their psychometric study of 150 white male adult delinquents, 68 had better scores on the Porteus test than on the Stanford, 2 had equal scores, and 38 had lower scores. They suggested that the type of delinquent case used may have been a factor in these results.

In a study of 203 delinquents, Knight (48) found an insignificant difference between the mean IQ on the Stanford-Binet and the mean PQ on the Arthur performance test (91.70 and 92.04, respectively). However, since the correlation between the two was only  $+.56 \pm .03$ , the author pointed out the value of the Arthur as a supplement to the other test.

Lane and Witty (49) reported results on educational and intelligence tests given to approximately 650 boy delinquents when they entered an institution. The median CA of the group was 14 years, 5.6 months. The median mental age (from the Otis group test of mental ability) was 12 years, 9.4 months; the median educational age was 11 years, 6 months. Thus, the educational age of the boys was, on the average, about 3 years below their CA and 1 year, 3 months below their MA.

Of 3164 girls referred to the Women's Protective Association of Cleveland (17), only 47 were ranked as of superior intelligence. A large percentage of these cases had emotionally unstable parents, 33 lived in broken homes, and almost none were engaged in professional work for which they were qualified. The author commented that superior intelligence, when handicapped by emotional instability, poverty, lack of training, etc., may complicate the problem of adjustment.

The studies listed in this section and the previous one show clearly that low intelligence is not regarded as the important cause of crime that it was in the early days of intelligence testing. There is considerable disagreement as to just how important this correlate is, but the studies do, in the main, support placing the typical delinquent in the dull normal class. Any general statement as to the relative intelligence of offenders and nonoffenders is difficult. It appears safe to say that most results show inferiority of the test scores of criminals in comparison to the theoretical distribution of the population (the validity of which appears doubtful). Smaller differences have been found between offenders and such samples of the population as the Army draft, but no clear-cut conclusion can be drawn even from these, because the representative quality of these noncriminal groups is questionable.

Owen (70) has pointed out that, even if it were shown that most criminals are feeble-minded, it would not follow that the low intelligence itself caused the criminal behavior. Most writers at the present time consider the fact that many other influences may be operating. It appears to be generally recognized that low intelligence may, in individual cases, be a direct cause of crime, whereas in others it may be an indirect cause or merely an accompaniment of actual causes. For example, Hill (38) has suggested the possibility of a relationship between low mental ability and crime through difficulty in school. Interpreting the relationship of intelligence and crime in terms of the greater frustration and diminished effectiveness of the threat of punishment among those of low intelligence, the Yale collaborators (19) have suggested that the relation is not higher because of the low level of aspiration likely to accompany low intelligence.

Most present-day writers would support Doll's statement (18) that the complexity of the selective factors involved in criminal groups makes it difficult to isolate the influence of a single factor, such as intelligence.

#### *Intelligence in Relation to Age of Offenders*

Worthy of consideration is Doll's conclusion (18) that intelligence is a more significant factor among juvenile delinquents than among adult prisoners. It was based on a survey of studies in New Jersey institutions which showed consistently, over a number of years, about 30% of delinquent boys to be feeble-minded, about 15% of reformatory young men, and about 8% of adult male prisoners. These estimates considered the influences of age, color, nationality, etc. A possible explanation for such a decrease lies in the facts that juvenile offenders include a larger percentage of individuals committed for petty crimes and that intelligence is more likely to be a factor in whether or not less serious offenders are brought before the police. Studies of the intelligence of adult petty thieves, for instance, might be revealing.

Ackerson (1) reported from his study of problem children that, for those below 80 IQ, the change in number of problems present was not great up to the age of 18. Among those with IQ above 80, the behavior prognosis was poor below the tenth to twelfth years, but more favorable after this. He suggested that the interaction of the age and intelligence factors may produce the effect of increasing the number of behavior problems within the lower age and IQ ranges and of inhibiting them within the upper age and IQ ranges.

Almost 20 years after a group of 166 subnormal children had been

studied, Fairbank (27) got follow-up information on them and compared them with 90 "normal" children from the original survey. Twenty-five per cent of the subnormal group had juvenile or police records, in contrast to 11% of the normal group. The fact that relatively few of the juvenile court cases (8 out of the 26 subnormal cases and 2 out of the 4 normal cases) turned up in the police court suggested to the author that early delinquency tendencies are apt to disappear as the child develops. This was supported by evidence that only 15 of the 34 subnormal cases in whom delinquency traits were noted later had court records.

Zeleny's survey (94) of 163 studies showed fewer feeble-minded (by no standard criterion) among juvenile delinquents (25.6% of the boys and 39.0% of the girls) than among adult criminals (28.0% of the men and 43.6% of the women). However, when attempt was made to bring the studies to a more comparable basis, the ratio of feeble-minded between offenders and nonoffenders was 2.7:1 for girl delinquents and 2.8:1 for adult female criminals, but 1.8:1 for boy delinquents and only 1.3:1 for male adult criminals.

Within the group of juvenile delinquents alone, some evidence for lower intelligence with higher age has been found. In his study of delinquent and public school boys, Charles (12) found a decrease in mean IQ's from 12 to 16 years of age in both groups. He pointed out that this was not unexpected, since, for tests that give correct mental ages at all mental levels, intelligence quotients below 100 tend to decrease and above 100 tend to increase as the age of the group increases. Lichtenstein and Brown (53) obtained a similar trend in their survey of a delinquency area. The average IQ decreased from 99 for the 9-year-old group to 79 for the 15-year-old group. On the other hand, with the Kuhlmann-Anderson Group Test of Intelligence, Hales (34) found an average increase of 6.23 IQ points in a group of 118 reformatory inmates who were retested after an average period of 4.7 years.

#### *Intelligence in Relation to Type of Crime*

Sutherland's summary of studies (93) led him to believe that type of crime is affected somewhat by intelligence. He stated that those convicted of fraud are usually a more intelligent group and that sex offenders are generally a less intelligent group. Evidence was inconclusive for other specific offenses. For crimes grouped into general types, he thought it safe to regard those convicted of crimes of acquisition as a relatively superior group and those convicted of sex crimes as a relatively inferior one.

Indication that forgery and embezzlement occurred most frequently among the superior group was found by Frank in his study of 401 male delinquents (28). In his group, assault, rape, and other sex crimes tended to occur most frequently among the mentally deficient. However, he suggested that probably the particular crime committed is influenced more by specific conditions in the situation than by any one factor—even mental level.

Charles (12), in his study of reform school boys, found the mean IQ of those convicted for grand larceny or for burglary and larceny higher than for any other crime, though differences were small.

Similar tendencies were found by Hill (38), with the qualification that the relation between type of crime and intelligence was not clear-cut or conclusive. In his study of 1285 young male offenders, the average of those committed for the two most frequent sex offenses fell below the general average of the entire group, although the three boys convicted of contributing to delinquency, a sex offense, were quite high in mental ability.

Differences in the type of offense committed were also found by Glueck (31), who divided her 1000 delinquents into two groups: those below 81 IQ and those 81 and above. Property crimes had been committed by fewer offenders with low intelligence. They had been arrested in greater proportions than the upper group for stubbornness, destroying state property, running away, and similar offenses.

White and Fenton (91), comparing 117 institutionalized delinquents whose IQ's were greater than 95 with 160 whose IQ's were less than 95, found significant relationship between forgery and high intelligence, but the linkage of sex offenses with low intelligence was not statistically reliable. The authors pointed out that this may have resulted from the fact that all recorded instances of sex offense were included, not only the gross ones used as causes of court proceedings.

The percentage of feeble-mindedness for specific types of crime has been pointed out in some studies. Erickson (26), investigating 170 cases of abandonment, found 35% of them feeble-minded as compared to 18.2% of a group of 1500 general criminals. Abandonments by feeble-minded, he reported, occurred nearly three times as frequently as abandonments by comparable individuals of normal or nearly normal intelligence. Comparing 2049 women sex offenders and 2731 women nonsex or mixed offenders, Zeleny (94) reported that 51.5% and 37.6%, respectively, were classed as feeble-minded.

A comparison of 100 institutionalized auto thieves with 100 delinquents selected at random from the institution showed the former to have a higher median IQ (90 and 83). The author (81) concluded that, though there may have been a trend toward low intelligence in this group, it was not the significant factor in the delinquency.

Fifty white male truants and 50 white male nontruant delinquents, matched for chronological age, were compared by Murphy (64). The latter were superior to the former in intelligence (mean IQ of 81.1 and 86.9), in educational age (nontruancy group 1.1 years more advanced on the Stanford Achievement Test), and in general physical condition.

Burkey (10) made a study of 100 delinquent boys over 21 with IQ from 80 to 118, and 98 with IQ from 50 to 75, to see if there were any trend in the sequence of delinquencies committed. She found that the normal group began their delinquencies more frequently with stealing than did the subnormal group (42% and 28.6%), whereas the subnormal group began more often with sex offenses (3% and 8.2%). Differences in subsequent offenses were also found. For instance, the normal who began

with truancy tended to turn to stealing more often than the subnormal (58% and 34%).

An interesting study of the relation of mechanical ability to crime was made by Ruggles (79). Investigating 103 white boys on a prison farm, he found that crimes whose commission required mechanical ability were carried out by boys ranking highest on the Minnesota Paper Formboard Tests. His study also showed that, of the six sex crimes committed by his group, the baser ones were perpetrated by feeble-minded boys.

Studying 3294 behavior problem children with IQ from 50 to about 150, Ackerson (3) concluded that the following conditions appeared to be significantly related to mental deficiency of higher grade: retardation in school, slow or dull manner, mentally defective sibling, oversuggestibility, staff notation of unfavorable conduct prognosis, preference for younger children as playmates, object of teasing by other children, and question of hypochondria. Correlations between intelligence quotient and conduct total were  $+ .13 \pm .01$  for boys and  $+ .12 \pm .02$  for girls; between intelligence quotient and personality total,  $+ .15 \pm .01$  for boys and  $+ .16 \pm .02$  for girls; between intelligence quotient and police arrest,  $- .02 \pm .02$  for boys and  $- .07 \pm .03$  for girls.

### *Intelligence in Relation to Sex of Offenders*

A sex difference in the number of feeble-minded criminals has been reported by Zeleny (94) from his survey of 163 studies. Of the men, 28.0%, and of the women, 43.6% were so classified. Confirmation of this statistically significant difference was found by studying the juvenile delinquents. Classifications of feeble-mindedness were given to 25.6% of the boys and 39.0% of the girls. Similar results were obtained when Zeleny attempted to bring the studies to a comparable basis. The ratio of male criminal to noncriminal feeble-minded was 1.3:1; that for women, 2.8:1. For juvenile delinquents the ratios were 1.8:1 (boys) and 2.7:1 (girls).

Comparing IQ's of boys and girls in 3920 cases in which sex was noted, Owen (70) reported a mean of 81.54 for boys and 80.42 for girls. The  $D/\sigma_D$  of the difference between these means was 2.2.

In a study of 602 cases brought before a juvenile court, McClure (58) found that the mean Stanford-Binet IQ of the 435 boys was 80.03 and that of the 167 girls, 77.27. The  $D/\sigma_D$  of these figures was 2.2.

### *Intelligence and Recidivism*

Doll (18) has pointed out that, if low intelligence is a cause of crime, theoretically recidivists should form the lowest of all intelligence groups. His survey led him to state that just the reverse is the case. He attributed this partly to a relation between recidivism, type of crime, and selective influences on the basis of social status.

Thirty-three per cent of the feeble-minded among the 401 male delinquents studied by Frank (28) had prior commitments, as compared to a maximum of 20% in any of his three groups of highest intelligence. Seventy per cent of them had been arrested previously in comparison to 50.4% of the average group in intelligence.

A lower mean IQ (approximately 78) for 428 recidivists than for a group of 1731 delinquents (84.45) was reported by Mann and Mann (56). Glueck's study of 1000 delinquents gave evidence in the same direction (31).

However, Lane and Witty (50) reported that in their group of 700 delinquents, recidivists and nonrecidivists did not differ from each other in intelligence level; and in Hill's study (38) data supporting Doll's contention were obtained. He found, in 1285 male offenders, that the median Alpha score of first offenders was 63.0; that of occasional offenders, 70.0; and that of habitual offenders, 77.1 (though the differences were not significant).

From examination of recent material on the relation of intelligence and other factors to crime, it appears to the reviewers that those correlates which may be stated vaguely are presented by the various authors with considerable conviction as to their accuracy and importance. When factors are made specific and subject to rigorous scrutiny, less assurance is shown that any given one is significantly related to crime. On this account, intelligence as a factor probably is underevaluated, and vaguer concepts, such as "bad parents," probably are overevaluated.

#### SPECIFIC PERSONALITY TRAITS

Studies of offenders by means of a number of different personality tests have been reported.

Using the Pressey Interest-Attitude Tests (which question concerning things considered wrong, anxieties, interests, and kinds of people admired), Durea (23) devised a method for selecting items maximally effective in differentiating delinquents and nondelinquents. This involved choosing those items which showed the largest differences in incidence between delinquents and normals. The items were then ranked according to the size of these differences between normal and delinquent groups and according to the age groups for which the differences were found. Qualitative analysis of results from 316 delinquents indicated (1) that of things considered wrong, undesirable social traits, such as being conceited, were of negative concern; (2) that emphasis on items of worry, such as sins, seemed to indicate the presence of a pronounced morbid strain; (3) that interests were mostly of a relatively superficial nature, such as circus; and (4) that reactions to kinds of people admired indicated egocentricity on the part of the delinquents.

Applying his method to two new samples of offenders, Durea

(24) found a reliable difference between the means of a 13-year-old delinquent group (34 cases with mean differential weighted score of 19.6) and a control group of the same age (61 cases with a mean score of 10.5). The D/P.E.<sub>D</sub> was 7.2. The other sample compared 115 delinquents of various ages with 374 nondelinquents. Results gave a difference of 7.6 points between the mean differential weighted scores (15.3 and 7.7, respectively) for the two groups, with a D/P.E.<sub>D</sub> of 14.5. The author recognized the possibility that institutionalization itself may have affected the scores somewhat. He also recognized overlapping in the scores of delinquents and nondelinquents, but believed that an individual who (1) was retarded two and a half or more years in emotional age as measured by total Pressey score and (2) had a high score on the differential items should be studied for possible delinquency.

For the original group of 316 delinquents, little or no relationship was shown to exist between the differential scores obtained by Durea's method and degree of delinquency (as measured by Durea's delinquency index). However, correlations ranging from  $-.62 \pm .05$  to  $-.77 \pm .03$  between differential weighted scores and emotional age were obtained. Using as measures the total scores on the Pressey Interest-Attitude Tests, as well as the scores on the individual parts, Durea (22) found evidence that delinquents are retarded emotionally as compared with norms established on nondelinquents. Extent of retardation varied from age to age. There was less at ages 14 and 15 than at 16 and 17, for instance. Although no significant relationship was found between emotional age and degree of delinquent behavior, Durea believed the fact of emotional retardation suggested that emotional maturity is probably as important as intelligence in understanding the delinquent personality.

To find personality traits which distinguish least serious from most serious offenders, Durea (25) selected from 316 boys the 64 who received the highest delinquency index and the 64 who received the lowest. This index consisted of the sum of standard scores for three operations: length of time a subject had been an offender, total number of times a subject had appeared in Juvenile Court, and total weighted values for types of offense committed. Results for these subjects on the Pressey Interest-Attitude Tests indicated certain definite differences between least and most offensive offenders. Of the items which met the author's standard of differentiating between the groups (items at or above the 75th

percentile in the distribution of differences), preponderant weighting for the least serious group in items related to blameworthy circumstances suggested the presence of heightened sensitiveness to wrongs as an accompaniment of moderate degrees of offense. The most serious group was distinguished from the least serious group on only one item relating to blame—yellowness. But this high group was distinguishable from the low on the basis of the presence of more fear and anxiety states. In regard to objects of interest, those with high delinquency index showed differential responses to *shooting*, *movie star*, *card parties*, and *soldiers*; whereas those with low delinquency index marked *dominoes*, *children*, and *Sunday School* significantly more times. The reviewers point out the possibility that the less serious delinquents may have been more eager to show that they were "good." In connection with traits admired in others, the group with high delinquency index was distinguished from the low group by interest in factors relating to personal prestige, such as *rich*, *inventive*, and *expert*. Not so highly regarded by the more serious delinquents were such items as *generous*, *discreet*, and *humorous*.

Prior to Durea's work, Courthial (16) studied the emotional differences between 78 delinquent and 78 nondelinquent girls in the IQ range of 80 to 119. The groups were paired by chronological age, intelligence, cultural environment, and occupational level of father. With the three tests in the Pressey X-O, Form B, she found that (1) the delinquent girls marked fewer things wrong, (2) they had more worries, and (3) they had a wider variety of interests. The first two of these differences were large enough to be considered very reliable. Analysis of the specific items crossed out led Courthial to characterize the delinquent girls as more strongly emotional, with a lack of inhibitory forces and a range of interests probably leading to cravings and unrest. On the Woodworth-Mathews questionnaire of neurotic tendencies, the mean scores of the delinquents was 20.2, as compared with 11.6 for the non-delinquents. This difference was reliable. Examination of the answers given revealed that the delinquent girls had more conflicts with their environment, were not as well adjusted socially, and suffered more from feelings of physical discomfort. For the same groups, Courthial also reported a reliable difference on the Margaret Otis Test for suggestibility, in the direction of greater resistance to suggestion on the part of the delinquents. Similarly, on the Strong Resistance Test, the delinquent girls were reliably more

persistent than the control group. Courthial interpreted these findings as signs of strong individuality in the delinquent girls.

In a report by Ball (6), comparison was made of 135 prisoners from San Quentin and 319 pre- and postarmistice cases (a selected unstable group referred for treatment) previously studied by Hollingworth. The distribution of scores of the prison men on the Woodworth Personal Data Sheet was more symmetrical and had less variability than the scores of Hollingworth's group. In general, the comparative data showed similar results (mean of prison group, 17.83; P.E., .685; and mean of Hollingworth's group, 19.02; P.E., .416), but differences were noted in the types of response made. The kind of symptom characteristic of the prison group was more vague than the unfavorable responses of Hollingworth's group, which showed more clear-cut indications of emotional instability. For instance, sleep disturbances, worries, desire to steal, quick change of moods, and frequent change of interests were answered by 25% or more of the prison group; whereas Hollingworth's group was more characterized by feelings of illness, night terrors, sleep disturbances, dreams, tiredness, cardiac disturbances, bodily pains, feelings of not being their old selves, perseveration, etc. Ball concluded that a purely arbitrary number of unfavorable responses used as a criterion for the selection of unstable groups is not good procedure unless considered in the light of their qualitative aspects.

The Woodworth-Mathews Personal Data Sheet was also given by Snyder (86) to 100 delinquent boys and 100 delinquent girls. The girls were slightly more emotionally unstable than the boys. They revealed more markedly the tendencies (1) to have a dream life, (2) to feel that they were not understood, and (3) to be afraid of fire. More of the boys felt as though they had been wicked and complained of food and physical ailments.

Simpson (85) administered the Thurstone Personality Schedule (or Neurotic Inventory) to 252 male prisoners. Their average score was 44.6, exceeding that found by Thurstone with college freshmen by 8.6 points. Inmates afflicted with syphilis had a mean score of 51.2. Simpson found a coefficient of mean square contingency of +.34 between scores on the Personality Schedule and number of sentences. However, a similar coefficient between average length of time spent on jobs, sometimes regarded as indicative of emotional stability, and test scores was  $-.038 \pm .042$ .

The Thurstone and Thurstone Neurotic Inventory (revised) was used with 138 North Carolina women prisoners by Garrison (30), who compared their individual answers to the same questions used in a previous study of unselected girls by Mathews. Garrison's group exceeded Mathews' to the greatest extent in their desires (1) to be alone (51% and 15%); (2) to run away from home (60% and 4%); (3) to commit suicide

(26% and 1%); and in their expressions of temper (84.1% and 13%), feelings of misery (54% and 12%), and feelings of persecution (*e.g.* being badly treated by family—48% and 1%). Other questions revealed smaller differences, but the author concluded that the study showed a preponderance of emotional instability on the part of the delinquent women.

Significant differences between a group of 423 delinquent boys and a group of 419 public school boys on the Personal Attitudes Test for Younger Boys (Sweet) were found by Reusser (72). The former tended to be more critical than the average boy, to feel themselves more different from the average boy, to feel themselves nearer the ideal, and to be less able to estimate the feelings of others.

After pointing out that positive trait reactions (emotional stability, self-sufficiency, extroversion, etc., as measured by the Bernreuter inventory) tend to increase with age in an ordinary population, Horsch and Davis (42) reported a different result in the offenders they studied. Two hundred and twenty-nine industrial school inmates, 232 reformatory inmates, and 157 penitentiary inmates were tested. Positive trait reactions did increase from the lower age level of the industrial school through the reformatory, but the penitentiary inmates were lower than the reformatory inmates in everything except self-sufficiency. In emotional stability, extroversion, and dominance, they dropped from the position of those in the reformatory to just above the industrial school group. The authors considered it reasonable to suppose that the penitentiary environment with its longer exposure to restrictions developed the trend toward unsocial and introvertive reactions. In general, comparisons indicated fewer positive traits in industrial school inmates and penitentiary inmates than in the corresponding noncriminal population, but more positive traits in the reformatory inmates than among college students.

Fred Brown (9) utilized boys at three summer camps for comparative studies with the Brown Personality Inventory and the Fursey Developmental Age Scale. Ninety-one nondelinquent boys of average socioeconomic status excelled 112 predelinquent boys and 71 delinquent boys of low socioeconomic status in (1) emotional stability and (2) security scores. In addition, the nondelinquents had fewer symptoms of nervousness and were less irritable than the predelinquents. The predelinquents and delinquents were comparable in emotional stability, but the former were somewhat more irritable than the latter. The nondelinquents had higher developmental quotients than the predelinquents, who in turn excelled the delinquents. The nondelinquents also had higher developmental ages than the predelinquents, but this was not the case in comparison with the delinquents.

No significant relationship between degree of juvenile delinquency and social maturity (as measured by the Fursey Scale for Developmental Age) was found by Durea (21) in his study of 365 white boys in an Ohio industrial school. Indicators of the degree of juvenile delinquency used were frequency of appearance in the juvenile court, number of offenses committed, and the sum of weights assigned to the various types of offense (stealing, for instance, was given a weight of 27, and burglary, a weight of 39).

A ratio of 3 introverts to 1 extrovert (as determined by scores on the Neymann-Kohlstedt test) was found in a group of 136 native-born, literate male prisoners, age 17 to 25, by Ball (7). On account of the small sample, the author drew no general conclusions.

From performance on a combination of the Kent-Rosanoff word-association and the Luria tension-pressure tests, Houtchens (43) estimated the degree of mental conflict in 42 delinquent and 39 nondelinquent boys. Part of the cases were matched for age, intelligence, socioeconomic status, and school factors, but these factors had little relation to the test scores and were not so carefully considered in selecting the additional cases. The delinquents showed a bimodal curve of mental conflict scores. One of the modes coincided with that of the nondelinquents; the other one indicated greater mental conflict. Houtchens commented that those delinquents with the same degree of mental conflict as the nondelinquents may have lived in a situation where their acts were more or less approved. Kephart (47), using the same technique, found statistically significant increases in the same subjects after 6 months residence in a correctional school. A group which had been in the institution from 12 to 18 months showed a further significant increase in mean score. These differences were in the direction more characteristic of delinquents and psychoneurotics, if previous studies have given valid results.

A significant difference between delinquent and nondelinquent boys was found by Moore (62) in responses to a personal data blank which measured number of confessions made. Testing a new group of delinquents gave approximately the same median number of confessions.

Two forms of a disguised oral questionnaire of eight questions (split-half reliability of .45 and .51) were given to 100 entering state prisoners by Marchand (57). They were scored for quantity of response and emotional tone (euphoria, neutralness, and despondency). Neutral emotional level appeared most frequently (average number of neutral replies to eight questions, 3.78), euphoria slightly less (2.72), and despondency least (1.50). Parole violators were more despondent than any other group. Marchand found a correlation of +.355 between quantity of response and mental age and of +.315 between euphoria and mental age. Moreover, normal prisoners showed more responsiveness and euphoria than defectives and psychopaths (average responsiveness for normals, 19.8; for defectives, 18.2; for psychopaths, 18.5; average index of euphoria for normals, 8.6; for defectives, 5.9, and for psychopaths, 7.0). Doubt as to the validity of the test, however, is indicated by the fact that, with the exception of euphoria (+.86 and +.85), correlations were low between the questionnaire results and ratings of 56 of the subjects by two men having jurisdiction over their work and recreation.

Using a technique similar to that of Hartshorne and May in their I.E.R. Achievement Tests, Hill (37) measured the extent of cheating in 261 reformatory boys (ages 16 to 26) and 158 junior high school boys (77 rated as being behavior problem cases and 81 unusually well adjusted). Significant differences were found between the scores of the delinquents and problem boys ( $D/\sigma_D$ , 3.5) and between the delinquents and well-adjusted boys (6.5). The difference between the problem and well-adjusted boys

was only 1.7 times its standard error. Nearly two-thirds of the offenders did not cheat at all.

Holsopple (40) suggested that inability to inhibit or unlearn behavior habits may be part of the cause for recidivism. Using mirror-drawing to test this, he found differences in line with his hypothesis between the behavior records of two groups of 40 reformatory inmates divided on the basis of their mirror-drawing ability.

Personality differences between 50 male recidivists and 50 first offenders were studied through the interview method by Tolman (90). Statistically significant differences showed the repeaters to have greater political insurgency, feelings of grievance, antagonism toward authority, hostility toward the father, reserve with both mother and father, and lack of integration with the ideal. However, both groups showed wide dispersion. No significant difference in intelligence test scores was found.

A proposed test of early indications of criminality was devised by Hawthorne (35) for use with elementary or high school students. Measuring cruelty-compassion, the test was limited to possible prediction of crimes against the person. The 31 sections each had five items to be rated in order of preference. One item in each was *a priori* considered to be sadistic, and score on the test was the sum of the "sadistic" ranks given. In a tryout, Hawthorne gave the test to 126 junior and senior high school students and to over 300 juvenile delinquents. The latter showed lower scores for compassion, the difference being significant for each sample used.

Listing all the undesirable behavior traits found in the case material of 5000 children examined at the Illinois Institute for Juvenile Research, Ackerson (2) found fewer than 300 such traits appearing in more than .5% of the cases. There were a large number of traits with incidence of less than .5%, but more than half the children had none of them. The two traits having the greatest incidence were stealing (26%) and enuresis (25%).

An attempt to estimate the seriousness of about 150 traits was made by Ackerson (4). Using as subjects 2113 white boys and 1101 white girls examined at the Institute, he correlated the incidence for each trait with (1) police arrest, (2) the total personality items, excluding the one in question, and (3) the total of conduct items, excluding the one in question. Items correlating highest with police arrest were truancy from home, stealing, bad companions, truancy from school, staying out late at night, and gang associates. Those correlating highest with personality total were dementia praecox, queerness, depressed or unhappy manner, talking to self without apparent reason, contrariness, and question of change of personality. Traits most highly correlated with conduct-total were bad language, disturbing influence in home, "psychopathic personality," destructiveness, "annoying" girls, and truancy from home.

Work on the prediction of delinquency from personality traits has been done by Olson. In one study (66), 25 boys referred to a clinic for guidance were rated by their teachers according to the Haggerty-Wickman-Olson Behavior Schedule B. They differed significantly from the general school population in total scores on this schedule, which measures

certain mental, physical, social, and emotional traits. In another study, Olson reported an attempt to locate problem children by a nomination method (67). Elementary school teachers were asked to report the three children requiring the most attention because of undesirable conduct, to name three about whose conduct most complaints had been heard, and to rate these children on the Haggerty-Olson-Wickman Schedules A and B. The typical nominee had a percentile ranking of 90 on these ratings, but the author concluded that only half the children who would rank with the 10% of the population highest in problem-behavior tendencies would be located by this method. Court records of 3000 children, on whom personality measures were secured, were followed for a period of six years (68). Olson concluded that, in general, those children who appeared in court were ones for whom delinquency could have been predicted on the basis of the previous tests.

Healy and Bronner (36) compared delinquents with their nondelinquent siblings (105 in each group) and found from examination of records that 68 of the delinquents were reported more active than their siblings. Forty-six of the delinquents exhibited a degree of activity not exceeded by any one of the 105 siblings. In the same group, 91% of the delinquents gave evidence of deep emotional disturbances, but similar disturbances were found in only 13% of the nondelinquent siblings.

A clinical study by Childers (14) of hyperactive children led him to suggest that physical hyperactivity disappears with age and is replaced in some children, when restraints are lacking, by more specific types of behavior problem (such as stealing in boys and sex misconduct in girls).

A general conclusion from this series of studies—representative of many others—is that test results show offenders to be inferior in many aspects of personality, as illustrated by their emphasis on worry, their high scores on tests of neurotic tendency, and their retardation on tests of social maturity. Differences have also been found between the test scores of offenders of various degrees, between the two sexes, between individuals institutionalized for varying lengths of time. However, so great is the overlapping in all of these cases that no clear-cut picture of a criminal personality can be drawn. Important as this correlate undoubtedly is, its influence on crime can be thought of only in application to individual cases.

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## "COLOR BLINDNESS": CURRENT TESTS AND THE SCIENTIFIC CHARTING OF CASES

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Among the unfinished tasks of psychology at the present hour is the precise charting of color capabilities in the normal and the aberrant eye. Sub- and supersensibility to blue, green, yellow, red, and mixed light stimuli in daylight and twilight vision, shifts in brightness values in aberrant cases, are of paramount importance to aviator, night flier or worker, to the fabricator or detector of camouflage, as well as to the ordinary industrialist. Yet we must look to British workers, bred in the tradition of Galton and Pearson, e.g. R. A. Houstoun (5) at the University of Glasgow, for massed results of a bulk to warrant reliable curves of distribution. What holds us back? Are there no readily applicable procedures and measures available? Or are we hidebound by antiquated terminology and outworn theories?

### PSEUDO-ISOCHROMATIC TESTS

#### *Use and Defects*

Spectroscopic tests with monochromatic light are indispensable for research, but laborious and slow-moving, owing to the rapidity of retinal fatigue and need of time out for recovery. For speedier clinical color-vision tests we have too long been dependent upon Japan and Germany. The pseudo-isochromatic plates of Stilling, first published in 1876 at Strasburgh, brought to nineteenth and twentieth editions in 1937 and 1939 by E. Hertel, of Leipzig, present a mosaic of colored spots on a white ground with a number in a confusion color, with the intent to render the latter invisible to eyes manifesting certain stock types of congenital deficiency, red-green and blue-yellow *Farbenstörungen*. The predominance of curvilinear digits, especially three's and eight's, and use of irregular contours, however, permits factors other than color sensitivity to influence the results. Faulty perception, that is, may arise from astigmatism, retinal scotomae, uncorrected myopia, resulting in blurred or broken outlines. Instructions as to speed and distance (one meter, which renders the visual image practically foveal) are usually ignored. Further, digits are readily memorizable, encouraging dissimulation.

Edridge-Green's incomplete circle test (suggested by Nagel's old—and unreliable—uni- to multicolored circles on white?) avoids one pitfall only to stumble into the other; and his seven-primary assumptions prove irksome. The French mosaic diagram test by Schaaff (1925), with its pentagonal color spots and broken circles (borrowed from Landolt?), and the accessory card-sorting test, along with Rabkin's more recent triangle figures, promise better service, but all are at present unobtainable.

In his earlier editions Stilling relied mainly on two confusion hues—dark orangish red and olive green, both perceptible presumably by the ordinary color-blind as tan or fawn, *i.e.* low chroma yellows.<sup>1</sup> The darkening of red to blend into a ground of gray or brown spots of varying brightnesses was adopted as the critical test for the rarer 'protanopic' type of deficiency. In the nineteenth and twentieth 34-plate editions, however, Hertel took a leaf from the Oriental, introducing two diagnostic plates with gray digits on grounds of purplish and of scarlet-red dots, respectively, matches for about 700 and 640 m $\mu$ , and designed to coincide with the achromatic bands of the 'deutanopic' and 'protanopic' ('green-blind' and 'red-blind'). A dull-green digit on a ground of gray spots was also added. No high chroma RP's or BG's appear on the plates; though there is a greater variety of hues, especially in the designs for detection of B-Y blindness and various anomalies. The intricate instructions for the use of the various groups of plates are usually ignored, however, by the examiner, who relies simply on the total number of correct answers—to his own confusion.

The use of color filters to thwart the would-be dissimulator is recommended—a good suggestion, endorsed also by the British expert, Mary Collins (1). Moreover, by bleaching out certain constituent hues, color filters afford the color-capable a rough notion of the perplexities confronting the color-deficient. Since, however, two complementaries are usually depressed together in aberrant cases, even though in varying degrees, it is impossible to duplicate the resulting perception through the use of ordinary broad-band photographic filters (however misnamed 'monochromatic') or their combination. It is equally impossible to 'correct' color blind-

<sup>1</sup> The entire spectrum, of course, appears to the ordinary color-blind in yellows and blues of varying chromas, if the testimony both of the outer retinal zones of the normal eye and of cases of unilateral defect or retinal islands is to be trusted, though various other assumptions are still occasionally offered by three-color theorists.

ness by glasses. A missing quality cannot be restored, though a filter bleaching out or darkening it may enable the subject to detect its presence in the color field. This is true especially where a pair of complementaries is unequally depressed in color weakness. Dulling the one may serve to bring the other above the threshold.

Translation of the Stilling-Hertel directions is still inadequate, though adhering fairly closely to the descriptive term 'red-green blindness' in preference to the purely theoretical and misleading 'protanopia' and 'deutanopia' (lack of the first and of the second primaries). The plates may be used under an ordinary illuminant (though this is not recommended for the blue-yellow test design). Finally, many examiners familiar with the Ishihara report that its German prototype, with most of the plates blank to the color-deficient, is too depressing to the examinee.

Ishihara, the Tokyo expert, in his eighth edition (1939) has doubled the number of the 16 plates used in the familiar fifth edition of 1932, incorporating suggestions made by the writer in 1935 (9). There are now four examples of each variety of color combination, with both rectilinear and curvilinear digits in each group to equate legibility and at least one two-digit number to confuse the would-be dissimulator (able in the earlier edition to memorize the three critical two-digit designs).

The plates are planned for a lesser distance than the Stilling (30''), extending the visual angle of the digits over the macular and possibly an extramacular area. But the tendency of examiners, e.g. Miles (7), is to shorten or lengthen distance *ad libitum*, so that the visual image falls on differently color-sensitive zones of the retina, spans areas of varying acuity, and is subject to dimming from uncorrected myopia. Hence, the results of any two experimenters are rarely comparable—a pity, since both Istar Haupt (2) and Sybil Terman (12) have utilized for special color tests color blinds culled with the aid of the Ishihara from groups of nearly a thousand; and Miles (7) reports from a group exceeding a thousand.<sup>2</sup>

The plates of the Japanese ophthalmologist achieve a more saturated purplish red than do those of the German. (Has the Oriental the secret of the murex that gave the Romans their royal purple?) Ishihara's bluish green (500 m $\mu$ ) is also of a higher chroma, though actually he uses neither BG nor RP inks, even in

<sup>2</sup> Scores secured in a group color classification test, by a procedure involving many sources of error, were obtained by Terman. Normals and those failing on one or more Ishihara plates were tested.

his trick transformation digits, relying on color contrast from background spots to produce the illusion of these hues to the normal eye. The effectiveness of this device suggests that the graying-out for color-blinds of certain colored surfaces reflecting mixed light may be due to the canceling of blue by yellow valences or processes as postulated in Hering's tetrachromatic theory.<sup>3</sup>

The fact that the chromas of the Ishihara plates, while fair, are not maximal, proved by masking off the dots with gray and comparing them with the Munsell scale, explains the complaint by clinicians and military experts that the test throws out the color-weak along with the color-blind.<sup>4</sup> The present trend toward assigning the bulk of the 8 to 10% reported during the last decade as 'color-blind' to the 'color-weak' class indicates that perhaps the old Holmgren 3 to 4% of color-blind males may have been close to the truth (10). Since, however, the color-weak are virtually color-blind at a distance or in fog or rain or other unfavorable conditions, little harm and much good has probably come from rating the former as 'dangerous' defectives. There are still too many railroad accidents traceable to nonrecognition of signals.

In 1939 to 1940, when the supply of foreign tests began to run down, the writer planned a substitute pseudo-isochromatic test, utilizing a type of design more satisfactory on ocular grounds than digits, equitable, eliminating the chance of cheating. A greater range of chromas was to be employed, along with two intermediates between the R and RP of the Ishihara diagnostic plate, included at the request of U.S. examiners. For years, however, RP and BG have been stumbling blocks in the path of high-grade art reproductions and scientific printing in the best publishing houses, though there has been of late some improvement.<sup>5</sup>

<sup>3</sup> A statement in the introduction that has misled many psychologists, to the effect that color-blind perceptions are determined by the greater 'brightness' of blue and yellow, is obviously a mistranslation of 'striking' or 'vivid.' There is no proof that the blue-yellow pair are 'brighter' or lighter than the red-green, in deficient as compared with normal vision, though their relatively high chroma gives them as a rule a higher attention value than other portions of the spectrum. There are, however, probably many minor deviations in brightness values in different types of eyes, as yet unexplored by science.

<sup>4</sup> The white ground showing between the dots adds to the difficulty of the test by eliminating colored halos and the marginal contrast invaluable in the discrimination of low chromas.

<sup>5</sup> The recent emergence in advertising of vivid magenta and verdigris or turquoise does not signify, since permanence and narrow-band stimuli are not essentials in this field.

No eastern printing-ink firm could be found to meet the requirements of the writer's test as planned, though Jensen, printing a 4-plate test in Louisville, Kentucky, in 1935, got a close approach to the Ishihara reds. Meanwhile, a 46-plate test, designed to duplicate the most useful of the Ishihara and Stilling plates (14 of the one, 31 of the other), has been released by the American Optical Company. No standardization of the set has yet been attempted to the writer's knowledge; and as the duplication of hues and chromas is not precise, there can be no reasoning from the results on the two earlier standard tests to this one.

#### INDIVIDUAL VARIATIONS IN COLOR DEFICIENCY AND EFFICIENCY

##### *Devices to Measure It*

Those still relying on the earlier or later editions of the Ishihara need to be cautioned against placing faith in total scores.<sup>6</sup> All who have handled many cases clinically or administered special color tests to sizable groups agree on the great variations in sensitivity, whereas any printed test must be keyed to the average. These variations in hue sensitivity involve, in all probability, shifts in brightness also, upsetting the calculations of the standardized test. The most defective case ever handled by the writer, a girl retaining of the four primary hues yellow only, confounded her examiners by scoring relatively high on the Ishihara.

Three-color theorists try to absorb this variability by positing two groups of anomalous trichromats, separated out by the Nagel anomaloscope, an instrument for mixing red and green light in varying proportions to match a low chroma yellow (the 'Rayleigh equation').<sup>7</sup> Critics claim, however, that the division into two groups—protanomalous and deuteranomalous (red- and green-weak)—is a forced one. Actually there exist all grades of intermediates, plottable into a symmetrical distribution curve. Further, the results from the anomaloscope are ambiguous, carrying no certainty as to whether the individual is green-weak or red-sensitive, or vice versa (5, 8).

The interpretation offered by the writer is as follows: Apparent reduction of red-sensitivity revealed by the Rayleigh equation

<sup>6</sup> The scores from plates containing digits designated as 'invisible' to the normal eye require especially skeptical handling.

<sup>7</sup> For description of the various wool, lantern, card, and spectroscopic tests see Hayes (4), Haupt (3), and Turner (13).

(‘protanopia,’ ‘protanomaly,’ better ‘scoterythrous’ vision) may represent neither mere shortening of the spectrum in the red nor necessarily absence of a red receptor, but shift of the curves of sensitivity back along the spectrum, decreased red-sensitivity being compensated by increased sensitivity toward the short-wave end. So-called ‘deutanopia’ may imply the reverse, a shift toward the long-wave end, with decreased sensitivity in the violet. There are indications of both cases in the findings of Houstoun, Pierce, and Hecht. Analytical tests are needed, the determination of dark-adaptability in large segments of the population, and of color thresholds at a number of points along the spectrum, the latter obtainable possibly through the use of graded and measured Munsell papers. From these a color profile for four or more hues could be charted and a single color quotient calculated for each individual. His position, quartile or decile, in a given group or on a given distribution curve could then be assigned, for vocational purposes.

Correlation with scores from analytical tests of this type is needed for each test plate of the American versions of the Ishihara or Stilling. (Meyrowitz is said to have duplicated the latter.) In any case, an examiner needs to subject each erroneously read design to special scrutiny, *e.g.* turning back to Plates 12 and 13 to ask whether any colored spots are visible in the place of a missing digit; if so, of what color? (The reply determines whether color blindness or weakness is indicated.) Further, the examiner should ascertain whether repetition and longer exposure of Plates 4 and 5 will alter the pattern or response. Is partial misreading a purely casual matter, or does it correlate with possible green- or red-green-weakness or with blue-sensitivity? (Plate numbers here refer to the fifth edition of the Ishihara.)

A study of the latter plate pattern was begun by the writer in 1935, with North Carolina rural school children in the Samarcand or pine barren region, after finding this almost the sole design they slipped on. The question remains open whether the slip was purely casual, a function of lowered red-green-sensitivity, or of hyper-blue-sensitivity correlated with their North Scotland ancestry and a congenital deficiency of protective yellow pigment in the macula lutea.

Industrialists today are taking up the problems abandoned or neglected by psychological laboratories for more modernistic and showy projects. Fifteen years ago the National Institute of Industrial Psychology in Great Britain blazed the way (11). Re-

cently the Institute of Paper Chemists, in coöperation with the American Paper and Pulp Association, devised similar matching and grading tests for their dyers, to determine super- and subnormal color discrimination, and issued a monograph reproducing curves and tables from a number of recent studies, printing a number of confusion colors and their spectral reflectance curves, and a bibliography (6).

Finally, in response to urgent requests from industry and clinicians, the Inter-Society Color Council, in 1941, set a committee working on a test of color aptitude modeled on that devised in 1926-1932 in Britain under Davies, Stephenson, and Pierce, with C. S. Myers as consultant (11). The new test material consists of paired chips in a glossy plastic, to be serially arranged or matched by the individual tested. The I.S.C.C. test is thus far limited to two R's approximating those of the diagnostic Ishihara plate, with a finely graded series of chromas ranging from middle saturation to gray, of medium brightness;<sup>8</sup> though the British workers found blue and yellow sets also necessary for grading colorists in half a dozen vocations. If the varied scores ranging from 19 to 266 in preliminaries turn out to correlate more accurately with industrial color discrimination than the total scores of the pseudo-isochromatic tests, the longer time required for the I.S.C.C. test may be justified in the vocational laboratory.

#### THE HANDICAP OF OLD HARD-AND-FAST CATEGORIES OF COLOR BLINDNESS

Meanwhile, the greatest stumbling block to progress in the scientific charting of color capabilities lies in antiquated terminology—protanopia, deutanopia, and trichromatism, along with protanomalous and deuteranomalous—reminiscent of nature's ancient errors in the way of plethiosauri and ichthyosauri. (*Psychological Abstract* reviewers have never learned to use these terms correctly.)

Survey of the early experimental literature serves at once to discredit the protodeuter antithesis—arrived at only by throwing intermediate cases in the discard. Von Kries' crystallizing out of the two types is based on an absurdly small handful of cases, with irregularities of experimental procedure possible only to one in the grip of theoretical presuppositions (8). That the relatively rare 'protanopia'—'red-blindness'—implies primarily a shortening

<sup>8</sup> Incidentally, the test material indicates the existence of a greater number of discriminable chroma steps in the reds than has usually been reported.

of the spectrum in the long-wave end (or perhaps the shift leftward above suggested), superadded, in many cases, to dichromatism and more accurately termed 'scoterythrous' (Rivers), was suggested above. Houstoun reports as severe cases in the tetrachromatic or 'normal visioned' as in dichromatics (5). Deutanopia, on the other hand, may represent a shift toward the long-wave end.

It is a fair working assumption that these shifts of sensitivity—*proto* and *deuter*—the first strongly reminiscent of the Purkinje shift, will one day be shown to correlate with excess or deficiency of rhodopsin or other absorptive pigments in the eye. Scoterythrous vision may be simply the survival of the eye adapted by nature for dim light vision, the fog or jungle eye; deutanopia, the desert or littoral eye.

In any case, the present status of color research calls for an intensive study of thresholds for four to seven hues as above outlined; distribution curves for a thousand O's based on these thresholds or on the number of discriminable chroma steps for each hue; dark-adaptation curves; and further, the correlation of hue-sensitivity with dark-adaptability. Incidentally, along with the Greek derivatives above cited, the old term 'color blindness,' which has misled thousands, might well be swept into the discard.

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## A CRITICAL NOTE ON READING

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### RATE AND COMPREHENSION

Within the last 25 years educational psychologists have been teaching that a positive and, on the whole, a moderately high correlation exists between reading rate and comprehension. The average of the obtained coefficients is about .4. (In support of this see Anderson and Tinker, 3; Eurich, 7; Gray, 12; Haggerty, 13; Judd, 15; and Tinker, 21.) Comprehension as gauged characteristically by standard reading tests is a narrowly defined function. But in making application of comprehension scores we have tended to place a general construction upon them. Upon finding a positive correlation between speed scores and comprehension scores on standard reading tests, we have concluded that the fastest readers are the best and that the slowest are the poorest, without taking account of just how the comprehension score is obtained. It is a score earned on a section of a test called "reading comprehension." On the majority of reading tests this is also a speed score. The comprehension score is the number of items answered correctly within a length of time. Speed of reading the questions and speed of reading the text material to locate and determine the answers go into the score. Speed is implicated both in the speed score and in the comprehension score, perhaps in the latter about as much as in the former.

The problem has been attacked in a different way by Flanagan (8, 9, 10) by a special treatment of scores on the Coöperative Literary Comprehension Test. The test consists of several selections of literature representative of rather difficult poetic and prose styles. A number of multiple choice test items—five, on the average—accompany each selection. From this test Flanagan derived two kinds of scores: speed of comprehension and level of comprehension. The former is the total number of items correctly done minus a correction for guessing, which corresponds to the typical comprehension score as derived from standardized reading tests. The level-of-comprehension score is the average score earned on those scales which are completed. The test consists of four scales of 20 items each. By this method a perfect level-of-comprehension score is 20, and a perfect speed-of-comprehension score is 80. A pupil

who completes only one scale and answers all of the items correctly earns a perfect level-of-comprehension score. If he attempted none of the items in any of the other scales, his speed-of-comprehension score would be only 20, one-fourth of the maximum score.

This treatment of the data has some interesting possibilities for diagnostic work in reading; and comparison of his speed-of-comprehension and level-of-comprehension scores represents some improvement over the comparison of the conventional speed and comprehension scores as a method of determining the relationship between speed and comprehension in reading. But the method also has some limitations owing to the fact that the two scores have a good deal in common. Just as in the conventional type of procedure, speed of reading is a factor common to both the rate score and the comprehension score, so here comprehension is common to both scores. For purposes of studying the relationship between rate and comprehension it might be more desirable to employ two such tests, using one for purposes of deriving a rate-of-comprehension score and the other for deriving the level-of-comprehension score.

Flanagan reports a correlation of .77 between speed-of-comprehension and level-of-comprehension scores (9) and a correlation of .17 between rate of reading as indicated by the last item attempted within a time limit and the level-of-comprehension score on the Coöperative Literary Comprehension Test (10). This large discrepancy between the two coefficients may be taken to mean that the speed-of-comprehension score is to a considerable extent the same measure as the level-of-comprehension score. The correction for errors is common to both. The best expression of the relationship between speed of reading and comprehension in Flanagan's articles seems to be  $r = .17$ , the obtained coefficient between speed of reading and level of comprehension. His level-of-comprehension score represents an important contribution to methodology in that it eliminates the speed factor involved in conventional comprehension scores. Moreover, the low coefficient obtained when level-of-comprehension scores is put in relationship with rate scores substantiates the claim made above to the effect that the published coefficients between rate and comprehension are spuriously high.

By any intelligent construction of the term, rate of reading means the rate at which a person reads with understanding. No one is seriously interested, except for some experimental purpose, in ascertaining that rate at which isolated words may be perceived.

Rate of reading, then, really means rate of comprehension. It is well known that the rate of a given person varies with the level of comprehension to which he aspires and with the character of the reading matter. It is also recognized that mature readers vary enormously one from another in rate of reading a standard passage. Jorgensen (14) reported an S.D. of 51.7 words per minute for high school seniors on standard reading material, the mean being 260 words per minute. Booker (4) obtained an average rate of 242 words per minute for 664 college freshmen, the middle two-thirds falling between 180 and 300 words per minute. Undoubtedly the reading was done in both instances at varying levels of comprehension. It is not known, of course, what the variability would have been had all of the subjects aspired to the same level of comprehension. Probably it would still have been enormous.

There are persons who are identifiable as fast and slow readers, with all gradations in between. The question at issue is whether those who read at a rapid rate understand more, learn more, get more out of a reading, than do those who read at a slow or moderate rate. It is recognized that there is no one fixed rate of reading that characterizes a person; but there are those who characteristic-ally read fast, moderately fast, moderately slow, and so on.

This paper advocates the reclamation of an abandoned method of attacking the problem at hand. What we really wish to know is the relationship between the speed at which a person reads and what he gets out of a reading—what he learns. In educational psychology we have interpreted the obtained coefficients between rate and comprehension scores as being an expression of such a relationship. For reasons stated above, this is untenable. The fast reader may actually learn more in a single reading than does the slow reader, but positive correlations between the prevailing rate and comprehension scores do not prove it.

If the crux of the problem is the relationship between speed of reading and learning, it can be attacked more profitably by the use of learning scores. King utilized this procedure in two investigations published in 1916 and 1917 (17, 18), and Abell used it in 1894 (1). Both investigators found the two variables to be virtually unrelated. Any of the tests now used for the purpose of assessing learning are suitable for this purpose. The only requirement peculiar to their use in an investigation of this kind is that a time limit not be imposed. Perhaps ideally the rate at which the subjects normally read when they study or are otherwise set to apprehend

the content of the reading matter should be determined by independent means. Each subject then should be required to read at this predetermined rate in the experimental situation. This procedure has been criticized on the ground that the score obtained is a memory score. Perhaps here again we have been misled by the use of a term. Any act of learning requires memory, and any measure of learning is to some extent a measure of memory. Nor is this situation peculiar to investigations of learning. Almost every test involves memory to some extent. In a reading test the pupil must remember the answer long enough to record it, even if he holds his finger on the line in the text that contains the answer.

There is reason to believe that the pupil who has the best understanding can give a moment later the best account of what he sees and hears or otherwise apprehends. The pupil who can give the best account a moment later can also give the best account a day or a week later (6, 11, 19, 20). After all, good comprehension is of no educational value save for the fact that it means that a good response can be made afterward.

#### FIXATIONS IN READING

Incidentally, a word may be added concerning another matter, namely: an unjustified generalization about the number of fixations made per line by the average mature reader. This is customarily reported to be 5 to 6, the value obtained by Buswell (5). It appears that 8 to 10 is more nearly correct. Buswell's data are correct for his conditions, which is as much as can be said of any data; but his conditions were not typical. His reading matter was set in a  $3\frac{1}{2}$ -inch (21-pica) line. This is about a half-inch shorter than the minimum used in high school and collegiate texts. Moreover, Buswell's mature readers read second-grade material. It is known that the number of fixations varies with the difficulty of the material. Judd and Buswell (16) obtained an average of 6.0 fixations per  $3\frac{1}{2}$ -inch line (3.5 *M*'s or pica units per fixation) for very easy reading matter, with fifth-grade pupils, and 7.8 fixations per line (2.7 *M*'s per fixation) for difficult matter. Anderson (2) obtained an average of 3.40 *M*'s per fixation by good readers (college students) for primer material and of 2.66 for difficult collegiate text, and an average of 2.92 *M*'s per fixation by good readers and of 2.68 by poor readers for moderately difficult text. Converting the foregoing into number of fixations per 24- and 28-pica line we get the following:

Subjects	Material	Av. No. Fixations per Line	
		24-pica	28-pica
Buswell's, high school and college	Second grade	6.2	7.2
Buswell and Judd's Fifth grade	Very easy	6.9	8.0
Fifth grade	Difficult	8.9	10.4
Anderson's, college Poor readers	College text, moderately difficult	8.9	10.5
Good readers	College text, moderately difficult	8.2	9.6

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## PSYCHOLOGY AND THE WAR

The work which American psychologists are doing in the war effort is more extensive and important than is often realized. Many who are not in immediate touch with governmental affairs have no way of knowing what is being done by psychologists, and the information available to those who are participating, whether in the armed services or as civilians, is inevitably limited. True, a great deal of psychological work in the service of the country is wisely regarded as confidential information, but there is much which can and should be known. A list of the psychologists thus engaged is an example of this information.

To provide a medium for the publication of such information, and of announcements which government officials would like to call to the attention of psychologists, the *Psychological Bulletin* will devote a special section to "Psychology and the War." The special section may not appear in each issue, but will appear as often as the available material warrants. As soon as possible an editor who is closely in touch with the work of psychologists in the war will be selected for this section. Meantime, the following announcement from the Office of the Chief of the Air Corps, War Department, marks the initiation of the section.

Plans are being made for the collection and publication of a roster of psychologists in government service. Every psychologist in such service, whether in the armed services or as a civilian, is asked to reply promptly to the request for his address and official designation which will presently be sent out. It is to be expected that new appointments and changes of address will be frequent, and the *Bulletin* will publish supplements to the roster as often as is possible and justifiable. Psychologists are asked, therefore, to notify the editor of such changes in order that the *Bulletin* may maintain an up-to-date record of psychologists who are officially in government war service. This and the other information likely to be published in the section on "Psychology and the War" will have historical importance as well as current significance.

JOHN A. McGEOCH.

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### MEMORANDUM REGARDING AREAS OF PSYCHOLOGICAL SERVICE IN THE AIR CORPS

#### *Discussion:*

The Air Corps has established a number of Psychological Research Units. These units, under a central office, are engaged in

the development and administration of individual and group tests to be used in the selection and classification of men for the aircrew. The program involves research on the various mental, motor, perceptual, and personality factors contributing to success in military aviation.

In the School of Aviation Medicine a program of research is being conducted on special psychological problems related to aviation medicine.

Under the Technical Training Commands there is a program for the development and administration of classification tests for the many technical and maintenance duties in the Air Corps.

*Commissioned Personnel:*

A few psychologists with special qualifications are being commissioned in the Air Corps and assigned to duty in the Psychological Research Sections. Future policy with respect to the commissioning of men of draft age cannot be stated. It is probable that few commissions will be granted to men of draft age unless they first attend Officer Candidate Schools.

*Enlisted Personnel:*

A fairly large number of enlisted men who are qualified under the specifications for Psychological Assistant as outlined in Army Regulations are being assigned to Psychological Research Units in the Air Corps. The requirements for Psychological Assistant specify that the individual "must have had experience in using standard apparatus in a psychological laboratory, or in designing apparatus for psychological research, or in using or constructing standard psychological tests. Such individuals ordinarily will have had some graduate training in psychology or in mental measurement, but sufficient training in a well-equipped laboratory will qualify an individual even though he may not have completed all work for a bachelor's degree. They must have had psychology or testing as a major subject and completed at least 18 semester-hours or 27 quarter-hours in these fields."

The advisable procedure for civilians to follow if they wish to enlist with the Air Corps for service in Psychological Research Units is outlined below:

- (a) Write to the Chief of the Air Corps, Attention: Medical Division, War Department, Washington, D. C., stating in full your education and experience. Specify all training in psychology and

testing. Specify (1) name in full, (2) date and place of birth, (3) local board number and registration serial number.

(b) If the individual is acceptable as a Psychological Assistant, he will be sent a letter indicating his acceptability.

If the above procedure is followed, it will enable the officers in the Army Air Forces to initiate action for obtaining the assignment of qualified individuals to psychological duty. The assignment of enlisted men to Psychological Research Units in no way prejudices their chances of later consideration for admission to Officer Candidate School.

*Civilian Personnel:*

A few psychologists, both men and women, hold Civil Service positions in the Office of the Chief of the Air Corps, the School of Aviation Medicine, the Air Corps Technical Training Command, and at other stations. It is anticipated that vacancies in various grades in these civilian positions will occur from time to time. Inquiries concerning such positions should be similar to those mentioned under Enlisted Personnel.

## BOOK REVIEWS

HARTMANN, G. W. Educational psychology. New York: American Book, 1941. Pp. xvi+552.

The contents of this volume overlap general psychology only to a negligible degree, a feature which will bring commendation from many instructors. Not so commendable, however, is the author's refusal to take cognizance of research in this field unless it has "made a difference" to him personally.

The author claims that a "consistent, coherent, and noncontradictory educational psychology can be achieved only by adhering to a comprehensive theoretical system that does justice to the observed reality." The theoretical system followed is apparently configurational, but not rigidly so. However, the author suggests that his "system" may be socially rather than psychologically oriented, for he says in this connection that "educational psychology has now unblushingly begun to place itself at the service of the cause of social reform instead of extending a tradition of remote reserve from the affairs of a harassed populace" (p. xi). The editor lends to the systematic confusion by claiming that the system expressed here hinges upon the viewpoint that "all who are given the opportunity, may grow into their full stature." If it were not for the author's systematic aspirations, as opposed to eclecticism, these questions as to what the system really is might be overlooked. When one forgets the system and examines the book itself, he finds it, except in a few instances, a very stimulating and praiseworthy achievement.

There are three major divisions. The first of these, "The Psychological Approach to Educational Problems," comprises five chapters (138 pages). The chapters, in order, deal with pupil needs, teacher's values, the human organism, the life cycle, and the field of educational psychology. Children's needs are seen as having a pivotal place in education. Teacher's values are considered in the light of Spranger's types. The prestige of the teaching profession, as indicated by the author's own research, is also discussed. The basic pattern of growth is seen to be from undifferentiated to differentiated. A very doubtful use of analogy here is an attempt to link the trend of physiological development with that of visual perception in such a manner as to imply that cognitive growth recapitulates organic growth. Thus there exists "an underlying kinship between the process by which our organs emerged from an organless entity and the manner in which we become oriented in the visual world" (p. 51). One learns also that "there are no psychological events before a living creature develops and they cannot be found after he dies," that "the unborn child exhibits surprisingly few responses that can be turned to educational purposes," and that "man—before he became 'human'—was a vertebrate."

For what purports to be a systematic presentation, the chapter on the field of educational psychology is eclectic in the extreme. Selected abstracts from *Psychological Abstracts* are reprinted and discussed, the aim being to acquaint students with the nature of education problems and

research. Over one-half of this chapter describes the topological interpretation of such things as preparation for a teaching career, getting correct answers, and overcoming distaste for cod-liver oil. Without further enlightenment, a student may gather that educational psychology is a mixture of many things, but primarily topology.

The second division of the book (302 pages) is concerned with *improvement* of intelligence, purposive behavior, emotional life, thinking and reasoning, learning, originality and creativity, character and personality, and social behavior and group relations. Emphasis upon improvement rather than upon these processes as they are treated in general psychology is quite apropos in a book on educational psychology. Of the chapters in this division, that on intelligence is most provocative, for the author takes the stand that intelligence may be improved not only by eugenics but by euthenics as well. A larger amount of literature than in any other chapter of the book is considered. In discussing the nursery school researches, the author takes the stand that "even if these were unanimous in indicating no increase—which they are not—this would not mean that such an increase was forever beyond the bounds of possibility; it would mean that we had not discovered the control of those forces which give to phenomena the properties they have and which make their very being possible in the first instance" (p. 187).

Pupil purposes, functional autonomy, and topology are stressed in the chapter on purpose. The discussion of emotional life has the theme that personal happiness is the goal of education. Principles for the improvement of thinking and reasoning are presented. The chapter on learning is characterized by emphasis upon achievement of insight. Despite much information to the contrary, none of which is discussed, the whole method is unqualifiedly recommended, apparently on the ground that it fits gestalt theory. In a chapter omitting much important research, it is doubtful whether the seven pages devoted to reprinting the author's items on the affective tone of different areas of educational psychology are either relevant or justifiable on other grounds. If this material required consideration, a few sample statements would have sufficed.

The discussion of originality and creativity is notable especially for a discussion of intuition. However, dubious analogy is again involved. The tendency of formal education to be "heavily overweighted on the side of absorption and gravely unbalanced on the side of self-planned performance" is regarded as "a rejection of the lesson presumably given by the structure of the organism itself which maintains a better equilibrium between the receptor and effector segments of the living system" (p. 371). The chapter on character and personality stresses the "theme-song" concept and "a design for personal living." The final chapter of this section deals primarily with leadership and coöperation.

The third large division of the book (86 pages) presents the application of psychology to the teaching of specific subjects at the elementary, high school, college, and adult levels. Emphasized throughout these chapters is the aim of achieving understanding or insight rather than mere rote knowledge. There is very little reference to the work of experimental educationalists in this area.

As one may gather from what has been said, this is an unusually provocative volume. As a text, it will doubtless need supplementing with research material. However, its shortcomings from the standpoint of research content are more than compensated for by its lively treatment of vital educational issues as seen through the eyes of a socially-oriented educational psychologist. The stimulating value of the book is furthered by the addition of excellent questions at the end of each chapter. There is a supplementary bibliography, primarily composed of book references, and a glossary. The general format is highly attractive.

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BUROS, O. K. (Ed.) *The second yearbook of research and statistical methodology.* Highland Park, N. J.: Gryphon Press, 1941. Pp. xx + 383.

*The second yearbook of research and statistical methodology* is a compilation of 1652 excerpted book reviews which appeared in various journals between January 1, 1933, and June 1, 1941. The reviews of the 359 books and monographs listed are taken from 281 English-language journals in the fields of agriculture, anthropology, astronomy, biology, business and economics, chemistry, education, engineering, eugenics, forestry, health and hygiene, history, insurance, library, literary and general publications, mathematics, medicine, personnel, philosophy, physics, political science, psychiatry, psychology, religion, science (general), social science (general), sociology, and statistics. The usual bibliographical data are given for each of the books and excerpts of reviews. With very few exceptions, the name of each reviewer is listed. In addition to the reviews, there is a periodical directory and index, a publishers' directory and index, an index of titles, an index of names, and a classified index to the books reviewed.

The editor lists eleven objectives to be achieved by the publication of this yearbook series. In the opinion of the present reviewer these can be condensed to three. The first is that of helping students and teachers keep abreast of the times in research and statistical methodology and making them more keenly aware of the inadequacy of much of what they are teaching. In the selection of textbooks this information would be particularly helpful. A second significant objective is to encourage a higher quality of work on the part of those who publish books in this field. Through an examination of reviews written for books on related topics, a prospective author can profit from the mistakes of others as they have been pointed out by various reviewers. A third purpose is to stimulate reviewers to take their responsibilities more seriously, writing more critical reviews where they are competent to do so and declining to write reviews of books which they are not qualified to evaluate.

There can be no disagreement with any of the objectives listed. Whether they will be achieved by publishing reviews in yearbook form is another question. At present many books are adopted for class use before the reviews appear in the journals and certainly long before they can be compiled in a yearbook. As a result, it is doubtful whether a project of this nature will have much immediate effect upon the textbook problem.

Because of the brevity of many reviews, the wide differences of opinion which they represent, and the nonevaluative character of some, it is a bit optimistic to hope that much educating can be accomplished by merely bringing the reviews together in convenient form, granted that only the best are selected. In any event, such an educational process will proceed very slowly.

The realization of the second and third objectives appears more hopeful. An author writing in the field of statistics and scientific methodology and interested in the improvement of his manuscript is likely to consult the *Yearbook* for helpful suggestions. To search for them in the original in a wide variety of journals would be too arduous a task. The same could be said for book reviewers. Indeed, to this reviewer it seems that the third objective is the more likely to be achieved. In later issues of the *Yearbook* it might be advisable to include a section on the subject of book reviews. For example, suggestions could be made regarding the amount of space which should be devoted to description and evaluation, criteria for evaluation, and style of presentation. If the improvement of reviews could be achieved through such means, the publication of this yearbook series would be well worth while.

A commendable improvement proposed by the editor for the yearbook series is the publication of original criticisms of articles and papers in the periodical literature. The need for such criticisms is clear, but, in view of the limitations in funds and machinery which would likely be encountered, it would seem best to confine the series to book reviews, at least for the present.

The present *Yearbook* is an ambitious undertaking and one of which the editor may well be proud. In the fields of psychology and education, the excerpts of reviews as presented are of high quality. The only limiting factor is the original quality of the reviews themselves. It is a fair presumption that reviews in other fields are equally good. Advanced students of statistics, progressive college teachers, and research workers will find this book useful and will welcome future publications in the series.

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*University of Iowa.*

CANTRIL, H. *The psychology of social movements.* New York: Wiley, 1941. Pp. xv + 274.

Cantril has addressed his book to persons who feel a lack of understanding of social movements that are rooted in crises even after reading books by historians, able journalists, and correspondents, or after listening to commentators. He assumes that these persons want to know what makes men follow an untried leader, how the social environment makes them suggestible, and what people are thinking about and hoping for when caught in the troubled events of today. Psychologists, in particular, he challenges to evaluate social movements and actually to influence directly the course of human affairs. In addition to providing meaning to alert inquirers into specified social movements, Cantril hopes to give them a conceptual framework which will explain any social movement.

The aim of the book is most ambitious. If the reader will pause to

reflect upon it, several implications will stand out clearly. One implication is that it is possible to provide a conceptual framework to explain all social movements—a framework that can be applied successfully by anyone who comprehends the basic principles elaborated within this book. Another is that psychologists can and should become interpreters of social events not directly investigated by them but reported to them by historians, commentators, biographers, or news reporters. To some, this appeal will be alluring. In accepting it, they will leap beyond data teased out by research, invest themselves with authority in consequence of their training, and become the leaders in a real democracy.

Three introductory chapters introduce and define the basic explanatory concepts. These chapters discuss "The Individual's Mental Context"; "Motivation in Social Life"; and "The Individual's Pursuit of Meaning."

Chapter I should be useful to beginning students in social psychology who need to understand how a culture is introjected. Each individual's mental context presents some orderliness partly because he is surrounded by social products called manners, customs, and institutions. When standardized, these are called social norms. In judging these norms, the members of society have derived social values. The author stresses the need of realizing that norms and social values exist before the individual can be aware of them. They can be experienced by direct contact, or secondhand as the ideas and behavior of other people. An individual, therefore, has passed on to him certain assumptions, as, for example, notions of right and wrong and of superior and inferior persons. His mental context is said to have three characteristics. Standards of judgment are forged out of the notions of good and bad, or out of the assumptions; frames of reference, or generalized points of view, issue from the notions and the standards of judgment; and attitudes, or definite interpretations of specific situations, are derived from general frames of reference. Cantril also discusses, in this first chapter, social conditions giving rise to individual differences in mental context and proceeds to show that these differences are selective agents in the formation of new frames of reference.

Chapter II deals sketchily with functional autonomy, the development of the ego, self-regard and its aspects of status and self-integrity, and the ego drive. Because of the rich materials ignored, this chapter fails signally to do justice to the importance of motivation in social movements. The author has substituted his particular classification of drives for other motives which he thinks are too inflexible to account for the variety of goals sought by human beings, or which he believes are too indirect in their operation to account for directed behavior. Apparently the ghosts of "instincts" haunt some psychologists; or can it be that a host of motives or needs defy adequate interpretation within the confines of a short chapter? Might not social movements within the conquered nations of Europe present different features if, instead of food hunger, the people enjoyed adequate nutrition?

The first part of Chapter III attempts to show why an individual's experience is organized. Three explanations are offered. Certain stimuli are patterned and so are perceived directly as an organization; social

stimuli are interpreted by frames of reference; and some social situations are chaotic and annoying to the individual so that he feels impelled to seek meaning. Suggestion and suggestibility are discussed ably in the latter half of the chapter. Factors favoring suggestibility, such as age, sex, fatigue, prestige, and majority opinion, are regarded as limiting conditions. They must be considered along with the mental context of the individual.

Part II of the book is an analysis of five social movements. Two chapters are devoted to a discussion of the Nazi Party and one each to the "Lynching Mob"; the "Kingdom of Father Divine"; the "Oxford Group"; and the "Townsend Plan." Generally, the author traces the origin and development of these movements and then applies the explanatory concepts elaborated in Part I.

Cantril has given us a challenging book written vigorously. The short Part I probably will be more useful to students of social psychology, and Part II will be more interesting. The author has been obliged to roam far from technical psychological inquiries to secure information. Serious readers may remain unsatisfied or still seeking meaning out of chaos. If frames of reference enable men to "place" and interpret a variety of stimuli, are not the sources cited in this book ever biased by similar frames of reference? Is a psychologist, in consequence of his training, able to allow for errors and inadequacies in the writings of men who are not required to check their observations rigidly? Even under relatively simple conditions, variables are hard to control and hypotheses are often relegated to the limbo of human errors when interrelationships are discovered. Can we modestly assume that data based upon uncontrolled conditions warrant that degree of confidence implied in this plan to provide a conceptual framework which will explain any social movement?

CHARLES BIRD.

*University of Minnesota.*

MCKINNEY, F. *Psychology of personal adjustment: students' introduction to mental hygiene.* New York: Wiley, 1941. Pp. xi + 636.

"This book was written to meet the need for a basic psychological text which frankly attacks the problems of the student that are most vital to his personal adjustment and offers him factual material on these problems. It is not a text in general psychology . . ." (p. vii). In line with this general objective the author has sifted out from a great mass of published experiments and experiences those which bear directly upon psychological problems facing college students. The text is to be used in a freshman or sophomore course designed to assist the students directly with their own personal adjustments, as opposed to the learning of certain facts and principles of psychology which now are required in a sequence of professional training. In a sense this book is prepared for the orientation classes offered to freshmen in many colleges.

The materials are organized in sixteen chapters around such major adjustment problems as the following: analysis and readjustment of personality; study techniques and methods of learning curriculum materials in college; personal efficiency in the use of time and money; physical hygiene with regard to the preparation of classroom materials; the choice

of a vocation, and the relationship of aptitudes and interests to such choices; social adjustment including leadership and popularity, personal appearance and habits, the making of friendships, participation in extra-curricular activities including fraternities and sororities; adjustment to social conventions and other social institutions in college, particularly sex adjustment and premarital adjustments; emotional stability and maturity including crushes, conflicts, emotional effusiveness, fears and worries, inferiority feelings, and the development of a philosophy of life.

In the last chapter the author discusses in general terms the adjusted personality which he defines in these terms: ". . . if you meet your needs with resources available in your environment" (p. 540). And again: "The man who is motivated, striving, and zestful in a number of directions which are compatible and within the extent of his capacities reaches optimal adjustment" (p. 544).

In Chapters II and III the author discusses methods of analyzing personality by means of preinterview blanks (printed in the appendix) listing achievements, activities, health, interests, and plans, home life, family, school history, etc.; self- and acquaintances' ratings; past experiences as the cause of adjustment problems; unsatisfactory motives and their effects on behavior; reactions to conflicts such as rationalization, projection, regression, defense mechanisms, fantasy, compensation, and repression. Personality readjustment, the author states, consists of changes in specific habits through understanding the symptoms and problems, finding the cause, reorganizing the motivation, morale building, assigning new motives, eliminating undesirable habits, and building other positive habits.

The author's style is personal without being preachy. Examples are given from college life, and illustrative cases depicting the adjustment problems of students highlight the principles stressed by the author. Significant and relevant research studies are carefully interwoven with the expositional material, and the principles and generalizations are made explicit for the student. References are given at the end of each chapter in the order of reference in the text itself and are not alphabetized. This arrangement may prove to be confusing to the reader. The author's emphasis is on procedures for personal counseling with adjustment problems of students rather than upon an exposition of psychological generalizations and facts. He is to be commended for the minimum of preaching of the mental hygiene type. Only certain precepts of the common-sense variety are given on pages 548 and 549, summarizing the preceding content in the student's own language. To the reviewer this book more closely approximates the ideal counseling book for undergraduates than the numerous other available texts.

E. G. WILLIAMSON.

*University of Minnesota.*

WHITE, W. *The psychology of dealing with people: serving the need of a feeling of personal worth.* (New ed., completely rev. and reset.) New York: Macmillan, 1941. Pp. xvii + 268.

For the benefit of readers who may be unfamiliar with the former (1936) edition of this book, it may be explained that it belongs in the

same category with such books as Webb and Morgan's *Strategy in handling people* and Overstreet's *Influencing human behavior*. Its purpose is realistic and immediate. It is in no sense a systematic treatise on psychology. It is an application of certain principles of interpersonal adjustment to the need for a feeling of personal worth. It suggests many practical methods of recognizing this need in oneself and in others and of ministering to it in such a way as to facilitate human relationships.

Close comparison of the two editions shows that many alterations in organization have resulted in a better-knit presentation without any fundamental changes in approach. However, the changes are more than mere editorial corrections, involving as they do a general tightening up of the outline of the book, condensation of chapters, removal of long lists, fewer and better-integrated illustrative materials, and more adequate discussion of both outline and illustrations. Such new material as has been added is so homogeneous with the previous plan that it is not evident unless one compares the two editions almost page for page. The new edition seems, as a result of these changes, to be much better integrated and more effectively subordinated to its outline than before.

The page format is more pleasing than in the earlier edition, as well as easier on the eyes. The use of larger type for the headings, and the centering of such material on the page, causes the outline to stand out more clearly. The vocabulary is modernized, and more acceptable phrasings are substituted in many instances for less pleasing ones. Omission of serial numbers or letters in listing items preserves the conversational tone of the book and seems more in keeping with the purpose of the discussion.

Although the number of illustrative items has been reduced, the new edition still contains more poetry than seems entirely warranted by the context. The discussion of research material is more to the point than was the case in the earlier edition, where it seemed to this reviewer that the author depended too much on mere inclusion of material that had appealed to him personally. Unfortunately, many persons tend to become so preoccupied with illustrations that they forget that the author was using them to make a point. Research data, however, tend to strengthen the principles set forth.

On page 34 the author points out: "By saying that *we* should do a certain thing, rather than that the other person should do it, a speaker . . . puts himself on a common basis with him [the hearer] and so avoids becoming antagonizing." On page 248, as well as in several earlier sections, however, the author reverts completely to speaking in the first person, even to the last sentence of the book: "The methods of dealing with people that I have presented are fundamental." In other words, in this and other places throughout the book the text does not quite exemplify the principles of human contact elsewhere set forth in the discussion.

Self-testing exercises that ask the reader to check a certain number of items as correct, without giving somewhere a key to which ones of the list are correct, may lead to much futile discussion. The instruction to write in the margin the number of chapters in which given topics have been discussed seems a rather weak form of review and one which, if

accomplished, would lead only to a sort of indexing of a particular book rather than to adequate grasp of principles. After all, there is nothing particularly sacred about the outline employed by any one textbook.

It has seemed to this reviewer that the best that one can do with the form of presentation selected by the author is to make it a kind of encyclopedic expansion of an outline rather than an integrated discussion of principles. A categorical list of dos and don'ts, even accompanied by sprightly illustrations, sooner or later becomes very dull reading and difficult to teach. And yet, many persons could doubtless be greatly improved by incorporating into their behavior a large number of the forms of response here set forth.

This book should be very useful as a reference work. It has gathered together a considerable number of the suggestions that might be made on the problem of increasing one's own feeling of personal worth and that of others. The title, *The psychology of dealing with people*, covers more territory than the presentation does. It seems that the subtitle indicates more truly what the scope of the discussion is—*Serving the need for a feeling of personal worth*.

EMILY L. STOGDILL.

*Ohio State University.*

TRAVIS, L. E., & BARUCH, D. W. Personal problems of everyday life: practical aspects of mental hygiene. (Student's ed.) New York: Appleton-Century, 1941. Pp. xv + 421.

The authors present their theme in the first chapter: Many troubles are unnecessary, and "inner strength" and self-understanding can aid us to meet them. In the first of three parts are chapters on symptoms, motives, adjustive processes, and analytical procedures. The second part discusses childhood and adolescent problems, marital relationships, work and play, and physical handicaps. The last part is devoted to a few therapeutic suggestions and good advice on the need for, and selection of, professional assistance.

As a book which attempts to give laymen some insight into their problems, it is good. The authors emphasize the fact that primary motives and cumulative childhood experiences are basic in symptom causation. They explain fundamental adjustive reactions clearly and simply. They write entertainingly, weave a variety of concisely presented cases into the discourse, and emphasize the use of penetrating self-understanding rather than of a set of tricks.

The authors, it would seem, intend the book primarily for college students. The reviewer's copy is a "student edition" and the preface states: "It is written so that the college student will not have to waste time with technical terminology necessitating a lot of looking up of new words and definitions."

As a text for college students' consumption, the book must be evaluated most critically. Most psychologists feel a responsibility to train their students in the appreciation of precise definitions, in the careful derivation of generalization from systematically collected empirical data,

and in the analysis and the unification of these concepts with each other in a logical system.

College students should find the book a contrast to their texts in the other sciences, if it be used as a text. The chapter headings are metaphoric and slangy, as, for example, "Life's Drama—The Curtain Rises"; "What We Are After"; "Behind the Scenes." The annotated bibliography of over 150 selected titles includes references from fiction, *Parents' Magazine*, popular books, articles from psychological journals, and technical reviews of periodical literature. The chapters are unevenly documented. Some contain no references to the literature, while others are well annotated. The variation in the number of references to systematic studies in the text does not seem to be related to the number or quality of journal articles on the subject which exist in the literature.

The authors generalize freely. For example, we are told: "When a child—or, for that matter an adult—bites his nails he may symbolically be biting someone else"; also, "The child who is not given love early finds it hard to give love later"; "Usually, when a girl is first noticed by a boy she craves to 'go steady'"; "As a baby he (the adolescent) wanted to be messy. He still unconsciously wants to be messy." The authors do not inform the reader by implication or straightforward statement which of their generalizations hold for specific or limited cases, which are hypotheses that await concrete evidence, and which, if any, emanate from empirical researches.

Despite the fact that the first few pages are devoted to the concept of the individuality of personality, many readers will use the given stock explanations for human behavior and view their associates in terms of common patterns, without consideration of individual variations. The student is not warned that a symptom which results from a given cause in a specific case cannot always be interpreted in the same manner. The book gives nomothetic biases which Dr. Travis and Dr. Baruch, with their clinical perspective, would not indorse.

The discussions of temper displays, jealousy, and fears are treated without apparent benefit of the many recent systematic studies. The authors do not even hint that their own discussions have been consciously oversimplified and that all of these phenomena are dependent upon many factors. The authors are to be praised for delving beyond symptoms to find the causes of these problems.

The student may conclude that all problems are as heavily laden with unconscious reactions as are those in the cases presented. He is not told that there seem to exist among children many conditioned fears, anger displays, and reading difficulties in which the unconscious conflicts are apparently minimal.

There is a paucity of specific information and suggestions in the book, even in portions in which such facts might have therapeutic or preventive value, as the sections dealing with sex education and vocational selection, and self-help. One of the few exceptions to this general treatment of topics is the discussion of the details of coitus in marriage, which is known to be a less important factor in marital happiness in nonclinical groups.

The acquisition of new habits is minimized in favor of insight, as in many books on this subject. The relationship of self-understanding to "inner strength" is not greatly emphasized. The authors recapitulate very seldom, considering the manner in which their free style carries one through the book without arrests.

FRED MCKINNEY.

*University of Missouri.*

STREET, R. F. *Children in a world of conflict.* Boston: Christopher, 1941. Pp. 304.

The author's purpose in writing this book, as stated in his introduction, is to "examine some of the ways in which children respond to environments which are confusing and frequently hostile, and to indicate what might be done to help them make the most adequate adjustments." He attempts to fulfill this purpose in eleven chapters, the first five of which present some of the more recent findings on child development and mental hygiene, whereas the remaining six deal with the organization of the school, teacher-pupil relationships, and the responsibilities that the teacher and the community have toward the child.

Chapter I, "Security and Loyalty," emphasizes that the child's security depends upon his ability to deal with a threatening environment and upon his usefulness to the group. His loyalty in turn depends upon security. Chapter II, "Variations and Adaptations," is a brief discussion of individual differences in adjustment. The next three chapters deal with growth: "Growth and Maturity"; "Growth and Behavior"; "Growth and Learning." Chapter VI, "The School and the World of Conflict," approaches the problems suggested by the title of this book more closely than any of the other chapters. "The School Organization," Chapter VII, is an outstanding chapter that gives the layman a better appreciation of the modern school and its purposes. The next three chapters—"Knowing the Child"; "Teacher-Pupil Relationships"; and "The Teacher at Work"—deal with school problems, techniques, procedures, and goals. The last chapter, "Guidance and the Community," points out the responsibilities of the average adult and parent in the matter of child guidance.

The author's style is simple, direct, conversational, and interesting. The principles and problems discussed are illustrated with interesting, although entirely fictitious, case histories which constitute 20% of the entire book. These illustrations usually appear near the end of the chapter and include accounts of both adjusted and maladjusted children. As to typography, the print is large, the pages small, and the spacing ample—particularly between chapters. Hence the book can be read very rapidly. Each chapter is preceded by a pertinent question that is enlarged upon in the succeeding pages. At the end of the book there is a list of fifteen suggested readings and a short index.

The title of this book suggests a number of problems that result from conflicting tendencies in our society, such as: aggression and coöperation, family unity and emancipation from the family, dominance and sympathy, etc. Further, the title suggests the present world conflict and its impact on children here and abroad. One would like to read more about

war propaganda among children, the uncertainty and insecurity generated by the war and its relationships to children's problems, and even about the effects of foster-homes-for-the-duration and evacuations on children. Unfortunately, most of these topics were touched on very lightly or not at all. Inclusion of some or all of them would have increased the value of the book, particularly since it was written primarily for the layman and parent.

GEORGE J. DUDYCHA.

*Ripon College.*

BABCOCK, H. Time and the mind: personal tempo—the key to normal and pathological mental conditions. Cambridge, Mass.: Sci-Art, 1941. Pp. 304.

This book might well be considered as two books.

"Book I" consists of the presentation by the author of a revision of her well-known test battery, this time worked out in collaboration with L. Levy. In the present revision there are a greater number of tests than in the original battery, and all tests designed to measure "mental efficiency" are timed or are affected by a time factor. Some tests which were included in the original battery have been discarded because of poor discriminative value. There are thirty-one tests in all, in addition to the Terman Vocabulary Test. Twenty-four of these tests make up the efficiency test. Three tests (General Information, Pronunciation, Time Orientation), which are not averaged with total score, are given for the light they throw on an individual's orientation and "psycho-motor-lingual" loss. Four other tests (Opposites, Sentence Completion, Analogies, Number Completion), which are not averaged with the efficiency score, are utilized to obtain an estimate of an individual's abstract-verbal ability.

The revised test battery and the author's discussion of its applications will be of considerable interest not only to psychologists who are working with neurological and psychiatric material but also to those who are engaged in educational work and in vocational and personal counseling.

"Book II" consists of the presentation of the author's opinions concerning a variety of psychological topics. Some of the section headings are: "Omissions in the Education of Academic Psychologists"; "Lack of Breadth in the Education of Leaders in Pathological Psychology"; "Sex and Education"; "Gestalt Psychology"; "Obstacles the Sustenance of Developing Character." As can be seen from even this meager sampling, much ground is covered.

ARTHUR L. BENTON.

*School of Aviation Medicine,  
U. S. Naval Air Station,  
Pensacola, Florida.*

GERMANE, C. E., & GERMANE, E. G. Personnel work in high school: a program for the guidance of youth—educational, social, and vocational. New York: Silver Burdett, 1941. Pp. xv + 599+index.

This book, subtitled *A program for the guidance of youth—educational, social, and vocational*, is based on experience in secondary school personnel

work gained in "five years of experimentation and investigation in forty-two high schools"—experimentation undertaken to "establish the basis for a personnel program in high school that could be initiated and conducted effectively, even under highly unfavorable conditions." This plan, in the opinion of the reviewer, is carried out remarkably well and in some detail.

The book sets forth a well-organized treatment of all of the topics usually found in works on high school guidance. Part I deals in regular fashion with the need for, and scope of, an organized personnel program. Part II devotes eight chapters to the problems of diagnosis of aptitudes, interests, and needs of students. Part III, under the heading of "Effective Ways of Providing Student Guidance," handles the role of the regular curriculum in a personnel program, the topic of individual counseling, and the problems of group guidance.

A most valuable feature of the book for high school teachers and counselors is the treatment of measurement and diagnosis given in Part II. Here are described a number of teacher-made or "improvised" tests and questionnaires which should be heartily welcomed by all secondary school systems with limited budgets. These materials, all of which are reproduced in full in the appendix, include various "Diagnostic Reading-Study Tests," a study-habits inventory, adjustment questionnaires, and a vocational interest inventory. They represent the "results of the co-operative work of administrators, teachers, and students" in compiling, testing, revising, and validating. Each of these instruments, and other diagnostic techniques, is set forth with full directions, suggested uses, advantages, and limitations. The reader is repeatedly cautioned against overinterpretation of data obtained by the use of these measuring instruments, against "playing hunches," indulging prejudices, etc.

One aspect of the book definitely disturbing to the present reviewer is the vocabulary. This is a minor point, to be sure, but it is somewhat unsettling to find the selected references at the end of each chapter entitled "Materials for Enrichment," or the repeated references to the ten "areas" of experience, e.g. Leisure and Hobby Area, World Relationships Area, Aesthetics, Culture, and Charm Area, etc. Also, one is apt to wonder about the fifteen "strategies" in personnel work, e.g. the Quintile Classification as a Strategy, the Parent-Teacher Coöoperative Sheet as a Strategy, the Appraisal Chart as a Strategy, etc. In the same class of disturbing elements, to the reviewer, is the inclusion throughout the book of full-page illustrations of various high school activities having no connection whatsoever with the text. These appear to have been added in the publishing on the assumption that all books must be illustrated.

These are minor criticisms of an otherwise very worth-while work, but they may give an unfavorable first impression, which is definitely unwarranted. The book improves with reading. In the judgment of this reviewer, its wealth of useful diagnostic materials, its detailed treatment of techniques, and its insistence on reliable and valid information for guidance make this work one of the best handbooks available for the teacher or counselor in secondary schools.

E. DONALD SISSON.

*Louisiana State University.*

## BOOKS AND MATERIALS RECEIVED

HILDRETH, G. *The child mind in evolution: a study of developmental sequences in drawing.* New York: King's Crown Press, 1941. Pp. 163+illustrations.

KORZYBSKI, A. *Science and sanity: an introduction to non-Aristotelian systems and general semantics.* (2nd ed., with supplementary introduction and bibliography.) Lancaster: International non-Aristotelian Library Publishing Company (Science Press, Distr.), 1941. Pp. lxxi+806.

MARQUIT, S. *Understanding and dispelling fears.* New York: Doma, 1941. Pp. 32.

RUNES, D. D. (Ed.) *The dictionary of philosophy.* New York: Philosophical Library, 1942. Pp. 343.

## NOTES AND NEWS

AT the 1941 Annual Meeting of the AMERICAN PSYCHOLOGICAL ASSOCIATION it was voted by constitutional amendment to broaden the criteria for TRANSFER FROM ASSOCIATE TO MEMBER or for DIRECT ELECTION AS A MEMBER. The action is described on page 831 of the November, 1941, issue of the *Psychological Bulletin*. New application and endorsement blanks implementing the action of the Association are now available upon request from the Secretary, Willard C. Olson, University of Michigan, Ann Arbor, Michigan.

A luncheon meeting and panel program was held on November 28 at the Roosevelt Hotel, New York City, to mark the TWENTIETH ANNIVERSARY OF THE PSYCHOLOGICAL CORPORATION and to honor its founder, JAMES McKEEN CATTELL. Those presiding at the panel discussions included: Drs. George H. Gallup, Walter V. Bingham, and Walter R. Miles. At the luncheon, Dr. E. L. Thorndike spoke, and a presentation, in honor of Dr. Cattell, for the advancement of the useful applications of psychology, was made on behalf of the Corporation by Dr. Paul S. Achilles.

THE CONNECTICUT VALLEY ASSOCIATION OF PSYCHOLOGISTS held its annual meeting on December 13 at St. Joseph College. The following officers were elected for the year 1942: President—Dr. Albert Kurtz, Life Insurance Sales Research Bureau; Vice-President—Dr. Margaret Kennedy, St. Joseph College; Secretary-Treasurer—Dr. Elmer Hagman, Hartley-Salmon Clinic; Program Chairman—Mr. Leonard Ferguson, University of Connecticut. Dr. Richard Sollenberger, of Mount Holyoke College, spoke on "Psychological Principles of Morale."

DR. LEO A. HELLMER, formerly of the University of Kansas, joined the staff of the Wichita Child Guidance Center on December 1.

DR. F. C. BARTLETT, professor of experimental psychology in the University of Cambridge, has been appointed a member of the British Medical Research Council to succeed the late Professor A. J. Clark.—*Science*.

DR. ZING-YANG KUO, director of the Institute of Physiology and Psychology at Chungking, is visiting England at the request of the Minister of Education for China and by invitation of the Universities' China Committee in London.—*Science*.

DR. NATHAN W. SHOCK, formerly research associate, Institute of Child Welfare, and assistant professor of physiology, Medical School, University of California, has been appointed senior psychophysiologist in the National Institute of Health, U. S. Public Health Service. Dr. Shock will be in charge of the experimental program of the Unit on Gerontology of the National Institute of Health, which has established a laboratory in the Baltimore City Hospitals, Baltimore, Maryland.

THE departments of psychology and chemistry of the UNIVERSITY OF PITTSBURGH have received from the RESEARCH CORPORATION OF NEW YORK a grant of \$2000 for support of continued research on the nutri-

tional basis of abnormal behavior in experimental animals. The research was begun last year through the aid of both the Research Corporation and the Buhl Foundation of Pittsburgh. At present, the investigations are being conducted in the laboratories of experimental psychology by Mr. R. A. Patton and Miss R. C. Wylie under the direction of Dr. H. W. Karn and Dr. C. G. King.

AFTER several years of planning, the MENNINGER FOUNDATION was organized and incorporated under the laws of Kansas in April, 1941, with headquarters in Topeka. The purposes of this new, nonprofit psychiatric foundation are: (1) provision for psychiatric education, especially the training of young physicians in psychiatry. The shortage of well-trained psychiatrists will presently become acute in relation to the requirements of World War II and the postwar period; (2) encouragement of research in psychiatric and psychological fields; (3) making available psychiatric treatment for patients in the low income bracket; (4) prevention of mental illness, especially through development of child psychiatry and application of psychiatric knowledge to education and child-rearing.

In addition to local officers, the following trustees have been elected: Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C.; Mrs. Albert Lasker, New York and Chicago; Dr. John C. Whitehorn, Johns Hopkins University, Baltimore; Mrs. Lucy Stearns McLaughlin, Santa Fe, New Mexico; Dean J. Roscoe Miller, Northwestern University Medical School, Chicago; Mrs. Sidney C. Borg, Jewish Board of Guardians, New York City; George E. Hite, Jr., Milbank, Tweed, and Hope, New York City.

The Menninger Foundation has already initiated several projects from the financial gifts which enabled it to make a modest beginning. Grants have been made for a 10-year study of the place of occupational therapy in psychiatric treatment, for a seminar and special Bulletin on Military Psychiatry and the distribution of this information to physicians on the Medical Advisory Boards of the entire country, and for research in the use of hypnosis in emergency psychotherapy and in substantiating newer psychiatric theories. Other projects are to follow.



